长安大学 ESI 月报

（2019 年 9 月）

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2019 年 9 月 11 日，最新一期 ESI 数据更新发表，统计数据覆盖时间范围为 10 年 6 个月（2009.1.1-2019.6.30），与上一期 ESI 数据（7 月）对比，发现有 6 所新进入 ESI 前 1%的大陆高校。长安大学在本次统计数据覆盖时间范围内的表现如下：

一．长安大学 ESI 高被引论文情况

在本次 ESI 统计数据覆盖时间范围内，全球位列 ESI 高水平研究机构总数 6081 所，比上期（2019 年 7 月）增加 124 所（上期 5957 所），我校 ESI 排名 2863 位（上期 2907 位）。高被引论文 81 篇（见表 1），比上期（2019 年 7 月更新数据为 60 篇）增加 21 篇，其中作为合作单位发表的高被引论文有 18 篇（见表 2）；ESI 热点论文 4 篇（见表 3），而上期我校没有 ESI 热点论文。

表 1　长安大学 ESI 高被引论文简况（按 ESI 被引频次排序）

序号	论文名称	WOS 号	作者	来源期刊	ESI 学科	ESI 被引次数
1	COMBUSTION AND PERFORMANCE EVALUATION OF A DIESEL ENGINE FUELED WITH BIODIESEL PRODUCED FROM SOYBEAN CRUDE OIL	000269711300022	QI, DH;GENG, LM;CHEN, H;BIAN, YZ;LIU, J;REN, XC	RENEWABLE ENERGY 34 (12): 2706-2713 DEC 2009	ENGINEERING	175
2	EXPERIMENTAL STUDIES ON THE COMBUSTION CHARACTERISTICS AND PERFORMANCE OF A DIRECT INJECTION ENGINE FUELED WITH BIODIESEL/DIESEL BLENDS	000281339700070	QI, DH;CHEN, H;GENG, LM;BIAN, YZ	ENERG CONV MANAGE 51 (12): 2985-2992 DEC 2010	ENGINEERING	165
3	PERFORMANCE AND COMBUSTION CHARACTERISTICS OF BIODIESEL-DIESEL-METHANOL BLEND FUELLED ENGINE	000274943400022	QI, DH;CHEN, H;GENG, LM;BIAN, YZ;REN, XC	APPL ENERG 87 (5): 1679-1686 MAY 2010	ENGINEERING	127
4	EVALUATION OF SHALLOW GROUNDWATER CONTAMINATION AND ASSOCIATED HUMAN HEALTH RISK IN AN ALLUVIAL PLAIN IMPACTED BY AGRICULTURAL AND INDUSTRIAL ACTIVITIES, MID-WEST CHINA	000381997600002	WU, JH;SUN, ZC	EXPO HEALTH 8 (3): 311-329 SEP 2016	ENVIRONMENT/ECOLOGY	115
5	MICROWAVE-ASSISTED IN SITU SYNTHESIS OF REDUCED GRAPHENE OXIDE-BIVO4 COMPOSITE PHOTOCATALYSTS AND THEIR ENHANCED PHOTOCATALYTIC PERFORMANCE FOR THE DEGRADATION OF CIPROFLOXACIN	000317878400014	YAN, Y;SUN, SF;SONG, Y;YAN, X;GUAN, WS;LIU, XL;SHI, WD	J HAZARD MATER 250: 106-114 APR 15 2013	ENGINEERING	113
6	BUILDING A NEW AND SUSTAINABLE SILK ROAD ECONOMIC BELT	000362903400023	LI, PY;QIAN, H;HOWARD, KWF;WU, JH	ENVIRON EARTH SCI 74 (10):	ENVIRONMENT/ECOLOGY	110

				7267-7270 NOV 2015		
7	MICROWAVE SYNTHESIS OF A NOVEL MAGNETIC IMPRINTED TIO2 PHOTOCATALYST WITH EXCELLENT TRANSPARENCY FOR SELECTIVE PHOTODEGRADATION OF ENROFLOXACIN HYDROCHLORIDE RESIDUES SOLUTION	000337554100003	LU, ZY;CHEN, F;HE, M;SONG, MS;MA, ZF;SHI, WD;YAN, YS;LAN, JZ;LI, F;XIAO, P	CHEM ENG J 249: 15-26 AUG 1 2014	ENGINEERING	93
8	URANIUM AND MOLYBDENUM ISOTOPE EVIDENCE FOR AN EPISODE OF WIDESPREAD OCEAN OXYGENATION DURING THE LATE EDIACARAN PERIOD	000352192100010	KENDALL, B;KOMIYA, T;LYONS, TW;BATES, SM;GORDON, GW;ROMANIELLO, SJ;JIANG, GQ;CREASER, RA;XIAO, SH;MCFADDEN, K;SAWAKI, Y;TAHATA, M;SHU, DG;HAN, J;LI, Y;CHU, XL;ANBAR, AD	GEOCHIM COSMOCHIM ACTA 156: 173-193 MAY 1 2015	GEOSCIENCES	88
9	HYDROGEOCHEMICAL CHARACTERIZATION OF GROUNDWATER IN AND AROUND A WASTEWATER IRRIGATED FOREST IN THE SOUTHEASTERN EDGE OF THE TENGGER DESERT, NORTHWEST CHINA	000381997600003	LI, PY;WU, JH;QIAN, H;ZHANG, YT;YANG, NA;JING, LJ;YU, PY	EXPO HEALTH 8 (3): 331-348 SEP 2016	ENVIRONMENT/ECOLOGY	80
10	APPRAISING GROUNDWATER QUALITY AND HEALTH RISKS FROM CONTAMINATION IN A SEMIARID REGION OF NORTHWEST CHINA	000381997600005	LI, PY;LI, XY;MENG, XY;LI, MN;ZHANG, YT	EXPO HEALTH 8 (3): 361-379 SEP 2016	ENVIRONMENT/ECOLOGY	69
11	HYDROCHEMICAL APPRAISAL OF GROUNDWATER QUALITY FOR DRINKING AND IRRIGATION PURPOSES AND THE MAJOR INFLUENCING	000369322200015	LI, PY;WU, JH;QIAN, H	ARAB J GEOSCI 9 (1): - JAN 2016	GEOSCIENCES	68

	FACTORS: A CASE STUDY IN AND AROUND HUA COUNTY, CHINA					
12	FOUR STAGES SYMMETRIC TWO-STEP P-STABLE METHOD WITH VANISHED PHASE-LAG AND ITS FIRST, SECOND, THIRD AND FOURTH DERIVATIVES	000378971700008	HUI, F;SIMOS, TE	APPL COMPUT MATH 15 (2): 220-238 2016	MATHEMATICS	63
13	A HIGH-ORDER TWO-STEP PHASE-FITTED METHOD FOR THE NUMERICAL SOLUTION OF THE SCHRODINGER EQUATION	000387090000085	ZHANG, W;SIMOS, TE	MEDITERR J MATH 13 (6): 5177-5194 DEC 2016	MATHEMATICS	62
14	NUTRIENT AND ORGANICS REMOVAL FROM SWINE SLURRY WITH SIMULTANEOUS ELECTRICITY GENERATION IN AN ALUM SLUDGE-BASED CONSTRUCTED WETLAND INCORPORATING MICROBIAL FUEL CELL TECHNOLOGY	000350931600009	DOHERTY, L;ZHAO, YQ;ZHAO, XH;WANG, WK	CHEM ENG J 266: 74-81 APR 15 2015	ENGINEERING	60
15	PROGRESS, OPPORTUNITIES, AND KEY FIELDS FOR GROUNDWATER QUALITY RESEARCH UNDER THE IMPACTS OF HUMAN ACTIVITIES IN CHINA WITH A SPECIAL FOCUS ON WESTERN CHINA	000401566600006	LI, PY;TIAN, R;XUE, CY;WU, JH	ENVIRON SCI POLLUT RES 24 (15): 13224-13234 MAY 2017	ENVIRONMENT/ECOLOGY	60
16	VIBRATION RESPONSE CHARACTERISTICS OF THE CROSS TUNNEL STRUCTURE	000379610300001	LAI, JX;WANG, KY;QIU, JL;NIU, FY;WANG, JB;CHEN, JX	SHOCK VIBRATION : - 2016	ENGINEERING	56
17	INVESTIGATION PROGRESSES AND APPLICATIONS OF FRACTIONAL DERIVATIVE MODEL IN GEOTECHNICAL ENGINEERING	000376141900001	LAI, JX;MAO, S;QIU, JL;FAN, HB;ZHANG, Q;HU, ZN;CHEN, JX	MATH PROBL ENG : - 2016	ENGINEERING	53

18	FIBER BRAGG GRATING SENSORS-BASED IN SITU MONITORING AND SAFETY ASSESSMENT OF LOESS TUNNEL	000385100600001	LAI, JX;QIU, JL;FAN, HB;ZHANG, Q;HU, ZN;WANG, JB;CHEN, JX	J SENS : - 2016	ENGINEERING	50
19	CHARACTERISTICS OF SEISMIC DISASTERS AND ASEISMIC MEASURES OF TUNNELS IN WENCHUAN EARTHQUAKE	000393021400036	LAI, JX;HE, SY;QIU, JL;CHEN, JX;WANG, LX;WANG, K;WANG, JB	ENVIRON EARTH SCI 76 (2): - JAN 2017	ENVIRONMENT/ECOLOGY	47
20	THE CATASTROPHIC LANDSIDE IN MAOXIAN COUNTY, SICHUAN, SW CHINA, ON JUNE 24, 2017	000415325500026	QIU, JL;WANG, XL;HE, SY;LIU, HQ;LAI, JX;WANG, LX	NATURAL HAZARDS 89 (3): 1485-1493 DEC 2017	GEOSCIENCES	46
21	MOF-DERIVED POROUS N-CO3O4@N-C NANODODECAHEDRA WRAPPED WITH REDUCED GRAPHENE OXIDE AS A HIGH CAPACITY CATHODE FOR LITHIUM-SULFUR BATTERIES	000424466300041	XU, J;ZHANG, WX;CHEN, Y;FAN, HB;SU, DW;WANG, GX	J MATER CHEM A 6 (6): 2797-2807 FEB 14 2018	MATERIALS SCIENCE	42
22	LANDSLIDE SUSCEPTIBILITY MODELLING USING GIS-BASED MACHINE LEARNING TECHNIQUES FOR CHONGREN COUNTY, JIANGXI PROVINCE, CHINA	000428194000110	CHEN, W;PENG, JB;HONG, HY;SHAHABI, H;PRADHAN, B;LIU, JZ;ZHU, AX;PEI, XJ;DUAN, Z	SCI TOTAL ENVIR 626: 1121-1135 JUN 1 2018	ENVIRONMENT/ECOLOGY	40
23	SINGLE IMAGE SUPER-RESOLUTION VIA LOCALLY REGULARIZED ANCHORED NEIGHBORHOOD REGRESSION AND NONLOCAL MEANS	000391475200002	JIANG, JJ;MA, X;CHEN, C;LU, T;WANG, ZY;MA, JY	IEEE TRANS MULTIMEDIA 19 (1): 15-26 JAN 2017	COMPUTER SCIENCE	40
24	GIS-BASED LANDSLIDE SUSCEPTIBILITY MODELLING: A COMPARATIVE ASSESSMENT OF KERNEL LOGISTIC REGRESSION, NAIVE-BAYES TREE, AND ALTERNATING DECISION TREE MODELS	000418899200046	CHEN, W;XIE, XS;PENG, JB;WANG, JL;DUAN, Z;HONG, HY	GEOMAT NAT HAZARDS RISK 8 (2): 950-973 2017	GEOSCIENCES	39

25	INVESTIGATING THE LONG-TERM SETTLEMENT OF A TUNNEL BUILT OVER IMPROVED LOESSIAL FOUNDATION SOIL USING JET GROUTING TECHNIQUE	000441684700001	QIU, JL;LIU, HQ;LAI, JX;LAI, HP;CHEN, JX;WANG, K	J PERFORM CONSTR FACIL 32 (5): - OCT 2018	ENGINEERING	36
26	A STATE-OF-THE-ART REVIEW OF SUSTAINABLE ENERGY BASED FREEZE PROOF TECHNOLOGY FOR COLD-REGION TUNNELS IN CHINA	000418574800110	LAI, JX;WANG, XL;QIU, JL;ZHANG, GZ;CHEN, JX;XIE, YL;LUO, YB	RENEW SUSTAIN ENERGY REV 82: 3554-3569 PART 3 FEB 2018	ENVIRONMENT/ECOLOGY	35
27	MESOPOROUS MANGANESE OXIDE WITH LARGE SPECIFIC SURFACE AREA FOR HIGH-PERFORMANCE ASYMMETRIC SUPERCAPACITOR WITH ENHANCED CYCLING STABILITY	000406138400005	GU, JM;FAN, XY;LIU, X;LI, SH;WANG, Z;TANG, SF;YUAN, DL	CHEM ENG J 324: 35-43 SEP 15 2017	ENGINEERING	34
28	RELATIVE VELOCITY DIFFERENCE MODEL FOR THE CAR-FOLLOWING THEORY	000424037200001	YU, SW;TANG, JJ;XIN, Q	NONLINEAR DYNAMICS 91 (3): 1415-1428 FEB 2018	ENGINEERING	34
29	A NEW HIGH ALGEBRAIC ORDER EFFICIENT FINITE DIFFERENCE METHOD FOR THE SOLUTION OF THE SCHRODINGER EQUATION	000416115500029	DONG, M;SIMOS, TE	FILOMAT 31 (15): 4999-5012 2017	MATHEMATICS	34
30	FLUID AND METAL SOURCES OF THE WENQUAN PORPHYRY MOLYBDENUM DEPOSIT, WESTERN QINLING, NW CHINA	000404064900026	QIU, KF;MARSH, E;YU, HC;PFAFF, K;GULBRANSEN, C;GOU, ZY;LI, N	ORE GEOL REV 86: 459-473 JUN 2017	GEOSCIENCES	33
31	RESPONSE CHARACTERISTICS AND PREVENTIONS FOR SEISMIC SUBSIDENCE OF LOESS IN NORTHWEST CHINA	000433913500032	QIU, JL;WANG, XL;LAI, JX;ZHANG, Q;WANG, JB	NATURAL HAZARDS 92 (3): 1909-1935 JUL 2018	GEOSCIENCES	32

32	GIS-BASED LANDSLIDE SUSCEPTIBILITY EVALUATION USING A NOVEL HYBRID INTEGRATION APPROACH OF BIVARIATE STATISTICAL BASED RANDOM FOREST METHOD	000430031800015	CHEN, W;XIE, XS;PENG, JB;SHAHABI, H;HONG, HY;BUI, DT;DUAN, Z;LI, SJ;ZHU, AX	CATENA 164: 135-149 MAY 2018	AGRICULTURAL SCIENCES	31
33	GLOBAL ASYMPTOTIC STABILITY OF CNNS WITH IMPULSES AND MULTI-PROPORTIONAL DELAYS	000370234600010	SONG, XL;ZHAO, P;XING, ZW;PENG, JG	MATH METH APPL SCI 39 (4): 722-733 MAR 2016	MATHEMATICS	26
34	IMPACTS ANALYSIS OF CAR FOLLOWING MODELS CONSIDERING VARIABLE VEHICULAR GAP POLICIES	000430027500031	XIN, Q;YANG, N;FU, R;YU, SW;SHI, ZK	PHYSICA A 501: 338-355 JUL 1 2018	PHYSICS	25
35	A STUDY ON THE MECHANICAL BEHAVIOR AND STATISTICAL DAMAGE CONSTITUTIVE MODEL OF SANDSTONE	000443205500012	WANG, JB;SONG, ZP;ZHAO, BY;LIU, XR;LIU, J;LAI, JX	ARAB J SCI ENG 43 (10): 5179-5192 OCT 2018	ENGINEERING	25
36	GEOCHEMISTRY, HYDRAULIC CONNECTIVITY AND QUALITY APPRAISAL OF MULTILAYERED GROUNDWATER IN THE HONGDUNZI COAL MINE, NORTHWEST CHINA	000431882400002	LI, PY;WU, JH;TIAN, R;HE, S;HE, XD;XUE, CY;ZHANG, K	MINE WATER ENVIRON 37 (2): 222-237 SP. ISS. SI JUN 2018	ENVIRONMENT/ECOLOGY	24
37	COO AND G-C3N4 COMPLEMENT EACH OTHER FOR HIGHLY EFFICIENT OVERALL WATER SPLITTING UNDER VISIBLE LIGHT	000425476800043	GUO, F;SHI, WL;ZHU, C;LI, H;KANG, ZH	APPL CATAL B-ENVIRON 226: 412-420 JUN 15 2018	CHEMISTRY	23
38	SIMPLE METHOD TO PREDICT GROUND DISPLACEMENTS CAUSED BY INSTALLING HORIZONTAL JET-GROUTING COLUMNS	000424800500001	WANG, ZF;SHEN, JS;CHENG, WC	MATH PROBL ENG : - 2018	ENGINEERING	22
39	DISTRIBUTION AND CHARACTERISTICS OF LANDSLIDE IN LOESS PLATEAU: A CASE STUDY IN	000430028000010	ZHUANG, JQ;PENG, JB;WANG, GH;JAVED, I;WANG, Y;LI, W	ENG GEOL 236: 89-96 SP. ISS. SI	GEOSCIENCES	22

	SHAANXI PROVINCE			MAR 26 2018		
40	EXTREME DEFORMATION CHARACTERISTICS AND COUNTERMEASURES FOR A TUNNEL IN DIFFICULT GROUNDS IN SOUTHERN SHAANXI, CHINA	000446842900001	LAI, JX;WANG, XL;QIU, JL;CHEN, JX;HU, ZN;WANG, H	ENVIRON EARTH SCI 77 (19): - OCT 2018	ENVIRONMENT/ECOLOGY	21
41	INVESTIGATION INTO GEOHAZARDS DURING URBANIZATION PROCESS OF XIAN, CHINA	000433913500033	WANG, ZF;CHENG, WC;WANG, YQ	NATURAL HAZARDS 92 (3): 1937-1953 JUL 2018	GEOSCIENCES	21
42	DISPLACEMENT AND STRESS CHARACTERISTICS OF TUNNEL FOUNDATION IN COLLAPSIBLE LOESS GROUND REINFORCED BY JET GROUTING COLUMNS	000446014000001	LI, YY;XU, SS;LIU, HQ;MA, EL;WANG, LX	ADV CIV ENG : - 2018	ENGINEERING	20
43	CONJUNCTIVE USE OF GROUNDWATER AND SURFACE WATER TO REDUCE SOIL SALINIZATION IN THE YINCHUAN PLAIN, NORTH-WEST CHINA	000430045800002	LI, PY;QIAN, H;WU, JH	INT J WATER RESOUR DEV 34 (3): 337-353 SP. ISS. SI 2018	ENVIRONMENT/ECOLOGY	19
44	PRINCIPAL STRESS ROTATION UNDER BIDIRECTIONAL SIMPLE SHEAR LOADINGS	000431052600013	LI, Y;YANG, YM;YU, HS;ROBERTS, G	KSCE J CIV ENG 22 (5): 1651-1660 MAY 2018	ENGINEERING	18
45	NUMERICAL INVESTIGATION OF PARTICLE CONCENTRATION DISTRIBUTION CHARACTERISTICS IN TWIN-TUNNEL COMPLEMENTARY VENTILATION SYSTEM	000439718300001	REN, R;XU, SS;REN, ZD;ZHANG, SZ;WANG, H;WANG, XL;HE, SY	MATH PROBL ENG : - 2018	ENGINEERING	18
46	HUMAN HEALTH RISK ASSESSMENT OF GROUNDWATER NITROGEN POLLUTION IN JINGHUI CANAL IRRIGATION AREA OF THE LOESS	000429985900018	ZHANG, YT;WU, JH;XU, B	ENVIRON EARTH SCI 77 (7): - APR 2018	ENVIRONMENT/ECOLOGY	17

	REGION, NORTHWEST CHINA					
47	AN ALGORITHM FOR TRAFFIC FLOW PREDICTION BASED ON IMPROVED SARIMA AND GA	000451529600043	LUO, XL;NIU, LY;ZHANG, SR	KSCE J CIV ENG 22 (10): 4107-4115 OCT 2018	ENGINEERING	17
48	STRUCTURAL RESPONSE OF THE METRO TUNNEL UNDER LOCAL DYNAMIC WATER ENVIRONMENT IN LOESS STRATA	000459674700001	QIU, JL;QIN, YW;LAI, JX;WANG, K;NIU, FY;WANG, H;ZHANG, GL	GEOFLUIDS : - 2019	GEOSCIENCES	17
49	CRACKING AND FAILURE IN ROCK SPECIMEN CONTAINING COMBINED FLAW AND HOLE UNDER UNIAXIAL COMPRESSION	000432056100001	FAN, X;CHEN, R;LIN, H;LAI, HP;ZHANG, CY;ZHAO, QH	ADV CIV ENG : - 2018	ENGINEERING	17
50	STUDY ON HIGHLY ENHANCED PHOTOCATALYTIC TETRACYCLINE DEGRADATION OF TYPE II AGI/CUBI2O4 AND Z-SCHEME AGBR/CUBI2O4 HETEROJUNCTION PHOTOCATALYSTS	000428101400013	GUO, F;SHI, WL;WANG, HB;HAN, MM;GUAN, WS;HUANG, H;LIU, Y;KANG, ZH	J HAZARD MATER 349: 111-118 MAY 5 2018	ENGINEERING	17
51	NATURE AND ORIGIN OF TRIASSIC IGNEOUS ACTIVITY IN THE WESTERN QINLING OROGEN: THE WENQUAN COMPOSITE PLUTON EXAMPLE	000418932900006	QIU, KF;YU, HC;GOU, ZY;LIANG, ZL;ZHANG, JL;ZHU, R	INT GEOL REV 60 (2): 242-266 2018	GEOSCIENCES	14
52	OCCURRENCE AND HEALTH IMPLICATION OF FLUORIDE IN GROUNDWATER OF LOESS AQUIFER IN THE CHINESE LOESS PLATEAU: A CASE STUDY OF TONGCHUAN, NORTHWEST CHINA	000469217300003	LI, PY;HE, XD;LI, Y;XIANG, G	EXPO HEALTH 11 (2): 95-107 SP. ISS. SI JUN 2019	ENVIRONMENT/ECOLOGY	13
53	PARTICLE SIZE DISTRIBUTION EFFECTS ON DEFORMATION PROPERTIES OF GRADED AGGREGATE BASE UNDER CYCLIC LOADING	000466179000001	LIN, H;WANG, H;FAN, X;CAO, P;ZHOU, KF	EUR J ENVIRON CIV ENG 23 (3): 269-286 MAR 4 2019	ENGINEERING	13
54	SOLUTE GEOCHEMISTRY AND MULTIVARIATE	000469217300002	LI, PY;TIAN, R;LIU, R	EXPO HEALTH 11	ENVIRONMENT/EC	12

	ANALYSIS OF WATER QUALITY IN THE GUOHUA PHOSPHORITE MINE, GUIZHOU PROVINCE, CHINA			(2): 81-94 SP. ISS. SI JUN 2019	OLOGY	
55	DYNAMIC FAILURE MODE AND DYNAMIC RESPONSE OF HIGH SLOPE USING SHAKING TABLE TEST	000464817300001	ZHOU, ZJ;REN, CN;XU, GJ;ZHAN, HC;LIU, T	SHOCK VIBRATION : - 2019	ENGINEERING	11
56	STATISTICAL ANALYSIS OF FIRE ACCIDENTS IN CHINESE HIGHWAY TUNNELS 2000-2016	000454963800039	REN, R;ZHOU, H;HU, Z;HE, SY;WANG, XL	TUNN UNDERGR SPACE TECHNOL 83: 452-460 JAN 2019	ENGINEERING	11
57	REVIEW OF THE FLAME RETARDANCY ON HIGHWAY TUNNEL ASPHALT PAVEMENT	000457659600044	QIU, JL;YANG, T;WANG, XL;WANG, LX;ZHANG, GL	CONSTR BUILD MATER 195: 468-482 JAN 20 2019	MATERIALS SCIENCE	11
58	TRAFFIC FLOW PREDICTION DURING THE HOLIDAYS BASED ON DFT AND SVR	000469291700001	LUO, XL;LI, DY;ZHANG, SR	J SENS : - 2019	ENGINEERING	10
59	A NEW SOIL-WATER CHARACTERISTIC CURVE MODEL FOR UNSATURATED LOESS BASED ON WETTING-INDUCED PORE DEFORMATION	000466352700001	ZHANG, YW;SONG, ZP;WENG, XL;XIE, YL	GEOFLUIDS : - 2019	GEOSCIENCES	10
60	MODELING OF LOESS SOAKING INDUCED IMPACTS ON A METRO TUNNEL USING A WATER SOAKING SYSTEM IN CENTRIFUGE	000468457700001	ZHANG, YW;WENG, XL;SONG, ZP;SUN, YF	GEOFLUIDS : - 2019	GEOSCIENCES	9
61	SEISMIC RESPONSE OF AEOLIAN SAND HIGH EMBANKMENT SLOPES IN SHAKING TABLE TESTS	000467316400162	ZHOU, ZJ;LEI, JT;SHI, SB;LIU, T	APPL SCI-BASEL 9 (8): - APR 2 2019	ENGINEERING	8
62	PUBLIC ACCEPTANCE OF FULLY AUTOMATED DRIVING: EFFECTS OF SOCIAL TRUST AND RISK/BENEFIT PERCEPTIONS	000458171100005	LIU, P;YANG, R;XU, ZG	RISK ANAL 39 (2): 326-341 SP. ISS. SI FEB 2019	SOCIAL SCIENCES, GENERAL	8
63	TYPHOON TRIGGERED OPERATION TUNNEL	000455439200001	REN, R;YU, DQ;WANG,	GEOMAT NAT	GEOSCIENCES	8

	DEBRIS FLOW DISASTER IN COASTAL AREAS OF SE CHINA		LX;WANG, K;WANG, H;HE, SY	HAZARDS RISK 10 (1): 562-575 JAN 1 2019		
64	METHANE EXPLOSION ACCIDENTS OF TUNNELS IN SW CHINA	000456347600001	HE, SY;SU, LJ;FAN, HB;REN, R	GEOMAT NAT HAZARDS RISK 10 (1): 667-677 JAN 1 2019	GEOSCIENCES	8
65	SPATIOTEMPORAL TRAFFIC FLOW PREDICTION WITH KNN AND LSTM	000460891500001	LUO, XL;LI, DY;YANG, Y;ZHANG, SR	J ADV TRANSPORTATION : - 2019	ENGINEERING	8
66	A REVIEW ON LAND SUBSIDENCE CAUSED BY GROUNDWATER WITHDRAWAL IN XIAN, CHINA	000468075000045	WANG, YQ;WANG, ZF;CHENG, WC	BULL ENG GEOL ENVIRON 78 (4): 2851-2863 JUN 2019	GEOSCIENCES	8
67	NUMERICAL ANALYSIS OF THE COMPRESSIVE AND SHEAR FAILURE BEHAVIOR OF ROCK CONTAINING MULTI-INTERMITTENT JOINTS	000455001900003	FAN, X;LIN, H;LAI, HP;CAO, RH;LIU, J	C R MEC 347 (1): 33-48 JAN 2019	ENGINEERING	7
68	HOW SAFE IS SAFE ENOUGH FOR SELF-DRIVING VEHICLES?	000458171100004	LIU, P;YANG, R;XU, ZG	RISK ANAL 39 (2): 315-325 SP. ISS. SI FEB 2019	SOCIAL SCIENCES, GENERAL	7
69	SPREADING SPEEDS AND TRAVELING WAVES FOR SPACE-TIME PERIODIC NONLOCAL DISPERSAL COOPERATIVE SYSTEMS	000446348800019	BAO, XX;SHEN, WX;SHEN, ZW	COMMUN PURE APPL ANAL 18 (1): 361-396 JAN 2019	MATHEMATICS	7
70	STATISTICAL ANALYSIS OF INFLUENCE OF COVER DEPTH ON LOESS TUNNEL DEFORMATION IN NW CHINA	000458959700001	HU, Z;DU, K;LAI, JX;XIE, YL	ADV CIV ENG : - 2019	ENGINEERING	7

71	HYDROGEOCHEMICAL CHARACTERISTICS, GROUNDWATER QUALITY, AND HEALTH RISKS FROM HEXAVALENT CHROMIUM AND NITRATE IN GROUNDWATER OF HUANHE FORMATION IN WUQI COUNTY, NORTHWEST CHINA	000469217300005	HE, S;WU, JH	EXPO HEALTH 11 (2): 125-137 SP. ISS. SI JUN 2019	ENVIRONMENT/ECOLOGY	7
72	THE RELATION BETWEEN WORKING CONDITIONS, ABERRANT DRIVING BEHAVIOUR AND CRASH PROPENSITY AMONG TAXI DRIVERS IN CHINA	000466830500004	WANG, YG;LI, LC;PRATO, CG	ACCID ANAL PREVENT 126: 17-24 SP. ISS. SI MAY 2019	SOCIAL SCIENCES, GENERAL	6
73	FREE VIBRATION OF NONLOCAL TIMOSHENKO BEAMS MADE OF FUNCTIONALLY GRADED MATERIALS BY SYMPLECTIC METHOD	000457206000020	ZHANG, K;GE, MH;ZHAO, C;DENG, ZC;XU, XJ	COMPOS PART B-ENG 156: 174-184 JAN 1 2019	MATERIALS SCIENCE	6
74	OPTIMIZATION ANALYSIS OF SETTLEMENT PARAMETERS FOR POSTGROUTING PILES IN LOESS AREA OF SHAANXI, CHINA	000466288900001	ZHOU, ZJ;ZHU, SS;KONG, X;LEI, JT;LIU, T	ADV CIV ENG : - 2019	ENGINEERING	6
75	SUPPORT SYSTEM FOR TUNNELLING IN SQUEEZING GROUND OF QINGLING-DABA MOUNTAINOUS AREA: A CASE STUDY FROM SOFT ROCK TUNNELS	000471865100001	WANG, XL;LAI, JX;GARNES, RS;LUO, YB	ADV CIV ENG : - 2019	ENGINEERING	5
76	NEW MULTIPLE STAGES TWO-STEP COMPLETE IN PHASE ALGORITHM WITH IMPROVED CHARACTERISTICS FOR SECOND ORDER INITIAL/BOUNDARY VALUE PROBLEMS	000458139300005	WANG, GP;SIMOS, TE	J MATH CHEM 57 (2): 494-515 FEB 2019	CHEMISTRY	5
77	INFLUENCE OF ANGULARITY AND ROUGHNESS OF COARSE AGGREGATES ON ASPHALT MIXTURE PERFORMANCE	000458942400064	KUANG, DL;WANG, XT;JIAO, Y;ZHANG, B;LIU, YJ;CHEN, HX	CONSTR BUILD MATER 200: 681-686 MAR 10 2019	MATERIALS SCIENCE	5

78	PONTRYAGINS MINIMUM PRINCIPLE BASED MODEL PREDICTIVE CONTROL OF ENERGY MANAGEMENT FOR A PLUG-IN HYBRID ELECTRIC BUS	000458712500069	XIE, SB;HU, XS;XIN, ZK;BRIGHTON, J	APPL ENERG 236: 893-905 FEB 15 2019	ENGINEERING	5
79	CHARACTERISTICS OF DEW FORMATION IN THE SEMI-ARID LOESS PLATEAU OF CENTRAL SHAANXI PROVINCE, CHINA	000459735100124	JIA, ZF;WANG, Z;WANG, H	WATER 11 (1): - JAN 2019	ENVIRONMENT/ECOLOGY	4
80	MULTI-CRITERIA USER EQUILIBRIUM MODEL CONSIDERING TRAVEL TIME, TRAVEL TIME RELIABILITY AND DISTANCE	000459368100002	SUN, C;CHENG, L;ZHU, SL;HAN, F;CHU, ZM	TRANSP RES PT D-TRANSP ENVIRO 66: 3-12 SP. ISS. SI JAN 2019	SOCIAL SCIENCES, GENERAL	4
81	URBAN TRANSPORT CARBON DIOXIDE (CO2) EMISSIONS BY COMMUTERS IN RAPIDLY DEVELOPING CITIES: THE COMPARATIVE STUDY OF BEIJING AND XIAN IN CHINA	000466455900007	YANG, L;WANG, YQ;HAN, SS;LIU, YY	TRANSP RES PT D-TRANSP ENVIRO 68: 65-83 SP. ISS. SI MAR 2019	SOCIAL SCIENCES, GENERAL	4

表 2　长安大学作为合作单位发表的 ESI 高被引论文

序号	论文名称	WOS 号	作者	来源期刊	ESI 学科	ESI 被引次数
1	MICROWAVE-ASSISTED IN SITU SYNTHESIS OF REDUCED GRAPHENE OXIDE-BIVO4 COMPOSITE PHOTOCATALYSTS AND THEIR ENHANCED PHOTOCATALYTIC PERFORMANCE FOR THE DEGRADATION OF CIPROFLOXACIN	000317878400014	YAN, Y;**SUN, SF（Sun, Shaofang，我校）**;SONG, Y;YAN, X;**GUAN, WS（Guan, Weisheng，我校）**;LIU, XL;SHI, WD	J HAZARD MATER 250: 106-114 APR 15 2013	ENGINEERING	113
2	MICROWAVE SYNTHESIS OF A NOVEL MAGNETIC IMPRINTED TIO2 PHOTOCATALYST WITH EXCELLENT TRANSPARENCY FOR SELECTIVE PHOTODEGRADATION OF ENROFLOXACIN HYDROCHLORIDE RESIDUES SOLUTION	000337554100003	LU, ZY;**CHEN, F（Chen, Fei，我校）**;HE, M;SONG, MS;MA, ZF;SHI, WD;YAN, YS;LAN, JZ;LI, F;XIAO, P	CHEM ENG J 249: 15-26 AUG 1 2014	ENGINEERING	93
3	URANIUM AND MOLYBDENUM ISOTOPE EVIDENCE FOR AN EPISODE OF WIDESPREAD OCEAN OXYGENATION DURING THE LATE EDIACARAN PERIOD	000352192100010	KENDALL, B;KOMIYA, T;LYONS, TW;BATES, SM;GORDON, GW;ROMANIELLO, SJ;JIANG, GQ;CREASER, RA;XIAO, SH;MCFADDEN, K;SAWAKI, Y;TAHATA, M;SHU, DG;HAN, J;**LI, Y（Li, Yong，我校）**;CHU, XL;ANBAR, AD	GEOCHIM COSMOCHIM ACTA 156: 173-193 MAY 1 2015	GEOSCIENCES	88
4	NUTRIENT AND ORGANICS REMOVAL FROM SWINE SLURRY WITH SIMULTANEOUS ELECTRICITY GENERATION IN AN ALUM	000350931600009	DOHERTY, L;**ZHAO, YQ（Zhao, Yaqian，我校）**;ZHAO, XH;WANG, WK	CHEM ENG J 266: 74-81 APR 15 2015	ENGINEERING	60

	SLUDGE-BASED CONSTRUCTED WETLAND INCORPORATING MICROBIAL FUEL CELL TECHNOLOGY					
5	MOF-DERIVED POROUS N-CO3O4@N-C NANODODECAHEDRA WRAPPED WITH REDUCED GRAPHENE OXIDE AS A HIGH CAPACITY CATHODE FOR LITHIUM-SULFUR BATTERIES	000424466300041	XU, J;**ZHANG, WX（Zhang, Wenxue，我校）**;CHEN, Y;FAN, HB;SU, DW;WANG, GX	J MATER CHEM A 6 (6): 2797-2807 FEB 14 2018	MATERIALS SCIENCE	42
6	SINGLE IMAGE SUPER-RESOLUTION VIA LOCALLY REGULARIZED ANCHORED NEIGHBORHOOD REGRESSION AND NONLOCAL MEANS	000391475200002	JIANG, JJ;**MA, X（Ma, Xiang，我校）**;CHEN, C;LU, T;WANG, ZY;MA, JY	IEEE TRANS MULTIMEDIA 19 (1): 15-26 JAN 2017	COMPUTER SCIENCE	40
7	LANDSLIDE SUSCEPTIBILITY MODELLING USING GIS-BASED MACHINE LEARNING TECHNIQUES FOR CHONGREN COUNTY, JIANGXI PROVINCE, CHINA	000428194000110	CHEN, W;PENG, JB（**Peng, Jianbing，我校**）;HONG, HY;SHAHABI, H;PRADHAN, B;LIU, JZ;ZHU, AX;PEI, XJ;DUAN, Z	SCI TOTAL ENVIR 626: 1121-1135 JUN 1 2018	ENVIRONMENT/ECOLOGY	40
8	GIS-BASED LANDSLIDE SUSCEPTIBILITY MODELLING: A COMPARATIVE ASSESSMENT OF KERNEL LOGISTIC REGRESSION, NAIVE-BAYES TREE, AND ALTERNATING DECISION TREE MODELS	000418899200046	CHEN, W;XIE, XS;PENG, JB（**Peng, Jianbing，我校**）;WANG, JL;DUAN, Z;HONG, HY	GEOMAT NAT HAZARDS RISK 8 (2): 950-973 2017	GEOSCIENCES	39
9	MESOPOROUS MANGANESE OXIDE WITH LARGE SPECIFIC SURFACE AREA FOR HIGH-PERFORMANCE ASYMMETRIC SUPERCAPACITOR WITH ENHANCED CYCLING STABILITY	000406138400005	GU, JM;FAN, XY（**Fan, Xiaoyong，我校**）;LIU, X;LI, SH;WANG, Z;TANG, SF;YUAN, DL	CHEM ENG J 324: 35-43 SEP 15 2017	ENGINEERING	34

10	GIS-BASED LANDSLIDE SUSCEPTIBILITY EVALUATION USING A NOVEL HYBRID INTEGRATION APPROACH OF BIVARIATE STATISTICAL BASED RANDOM FOREST METHOD	000430031800015	CHEN, W;XIE, XS;PENG, JB（**Peng, Jianbing，我校**）;SHAHABI, H;HONG, HY;BUI, DT;DUAN, Z;LI, SJ;ZHU, AX	CATENA 164: 135-149 MAY 2018	AGRICULTURAL SCIENCES	31
11	A STUDY ON THE MECHANICAL BEHAVIOR AND STATISTICAL DAMAGE CONSTITUTIVE MODEL OF SANDSTONE	000443205500012	WANG, JB;SONG, ZP;ZHAO, BY;LIU, XR;LIU, J;**LAI, JX（Lai, Jinxing，我校）**	ARAB J SCI ENG 43 (10): 5179-5192 OCT 2018	ENGINEERING	25
12	PARTICLE SIZE DISTRIBUTION EFFECTS ON DEFORMATION PROPERTIES OF GRADED AGGREGATE BASE UNDER CYCLIC LOADING	000466179000001	LIN, H;WANG, H;**FAN, X（Fan, Xiang，我校）**;CAO, P;ZHOU, KF	EUR J ENVIRON CIV ENG 23 (3): 269-286 MAR 4 2019	ENGINEERING	13
13	A NEW SOIL-WATER CHARACTERISTIC CURVE MODEL FOR UNSATURATED LOESS BASED ON WETTING-INDUCED PORE DEFORMATION	000466352700001	ZHANG, YW;SONG, ZP;WENG, XL（**Weng, Xiaolin，我校**）;**XIE, YL（Xie, Yongli，我校）**	GEOFLUIDS : - 2019	GEOSCIENCES	10
14	MODELING OF LOESS SOAKING INDUCED IMPACTS ON A METRO TUNNEL USING A WATER SOAKING SYSTEM IN CENTRIFUGE	000468457700001	ZHANG, YW;WENG, XL（**Weng, Xiaolin，我校**）;SONG, ZP;SUN, YF（**Sun, Yufeng，我校）**	GEOFLUIDS : - 2019	GEOSCIENCES	9
15	PUBLIC ACCEPTANCE OF FULLY AUTOMATED DRIVING: EFFECTS OF SOCIAL TRUST AND RISK/BENEFIT PERCEPTIONS	000458171100005	LIU, P;YANG, R;XU, ZG**XU, ZG（Xu, Zhigang，我校）**	RISK ANAL 39 (2): 326-341 SP. ISS. SI FEB 2019	SOCIAL SCIENCES, GENERAL	8
16	HOW SAFE IS SAFE ENOUGH FOR SELF-DRIVING VEHICLES?	000458171100004	LIU, P;YANG, R;**XU, ZG（Xu, Zhigang，我校）**	RISK ANAL 39 (2): 315-325 SP. ISS. SI FEB 2019	SOCIAL SCIENCES, GENERAL	7

17	FREE VIBRATION OF NONLOCAL TIMOSHENKO BEAMS MADE OF FUNCTIONALLY GRADED MATERIALS BY SYMPLECTIC METHOD	000457206000020	ZHANG, K;GE, MH;ZHAO, C;DENG, ZC;**XU, XJ（Xu, Xiao-Jian，我校）**	COMPOS PART B-ENG 156: 174-184 JAN 1 2019	MATERIALS SCIENCE	6
18	MULTI-CRITERIA USER EQUILIBRIUM MODEL CONSIDERING TRAVEL TIME, TRAVEL TIME RELIABILITY AND DISTANCE	000459368100002	SUN, C;CHENG, L;ZHU, SL;HAN, F**（Han, Fei，我校）**;CHU, ZM	TRANSP RES PT D-TRANSP ENVIRO 66: 3-12 SP. ISS. SI JAN 2019	SOCIAL SCIENCES, GENERAL	4

表 3　长安大学 ESI 热点论文简况（按 ESI 被引频次排序）

序号	论文名称	WOS 号	作者	来源期刊	ESI 学科	ESI 被引次数
1	GEOCHEMISTRY, HYDRAULIC CONNECTIVITY AND QUALITY APPRAISAL OF MULTILAYERED GROUNDWATER IN THE HONGDUNZI COAL MINE, NORTHWEST CHINA	000431882400002	LI, PY;WU, JH;TIAN, R;HE, S;HE, XD;XUE, CY;ZHANG, K	MINE WATER ENVIRON 37 (2): 222-237 SP. ISS. SI JUN 2018	ENVIRONMENT/ECOLOGY	24
2	SEASONAL HYDROCHEMICAL CHARACTERIZATION AND GROUNDWATER QUALITY DELINEATION BASED ON MATTER ELEMENT EXTENSION ANALYSIS IN A PAPER WASTEWATER IRRIGATION AREA, NORTHWEST CHINA	000449851900003	LI, PY;HE, S;HE, XD;TIAN, R	EXPO HEALTH 10 (4): 241-258 DEC 2018	ENVIRONMENT/ECOLOGY	14
3	OCCURRENCE AND HEALTH	000469217300003	LI, PY;HE, XD;LI,	EXPO HEALTH 11 (2):	ENVIRONMENT/ECOLOGY	13

	IMPLICATION OF FLUORIDE IN GROUNDWATER OF LOESS AQUIFER IN THE CHINESE LOESS PLATEAU: A CASE STUDY OF TONGCHUAN, NORTHWEST CHINA		Y;XIANG, G	95-107 SP. ISS. SI JUN 2019		
4	SOLUTE GEOCHEMISTRY AND MULTIVARIATE ANALYSIS OF WATER QUALITY IN THE GUOHUA PHOSPHORITE MINE, GUIZHOU PROVINCE, CHINA	000469217300002	LI, PY;TIAN, R;LIU, R	EXPO HEALTH 11 (2): 81-94 SP. ISS. SI JUN 2019	ENVIRONMENT/ECOLOGY	12

81 篇高被引论文的分布院系为：公路学院 37 篇，位居首位，比上期增加 11 篇，增长幅度在所有院系中最大，且近 4 期高被引论文呈增长趋势；环境科学与工程学院 18 篇，比上几期有较大增长幅度；汽车学院 7 篇，比上期增加 2 篇；信息工程学院 7 篇，比上期减少 2 篇；地质工程与测绘学院 6 篇，与上期持平；材料科学与工程学院 3 篇，比上期增加 1 篇；地球科学与资源学院 1 篇，与上期持平；理学院 2 篇，比上期增加 1 篇。其他学院仍未见有高被引论文出现。表 4 显示了我校近四期 ESI 高被引论文院系分布变化情况。

表 4　近四期长安大学 ESI 高被引论文院系分布情况

ESI 更新时间	公路学院	环境科学与工程学院	汽车学院	信息工程学院	地质工程与测绘学院	材料科学与工程学院	地球科学与资源学院	理学院
2019.1.19	19	10	6	4	3	3	2	1
2019.3.14	15	11	6	4	4	3	1	1
2019.5.9	23	11	6	4	4	3	1	1
2019.7.11	26	10	5	9	6	2	1	1
2019.9.11	37	18	7	7	6	3	1	2

本期我校 4 篇 ESI 热点论文均来自于环境科学与工程学院的李培月教授，该学院也是近几期以来第一次出现热点论文。表 5 显示了我校近四期 ESI 热点论文院系分布变化情况。

表 5　近四期长安大学 ESI 热点论文院系分布情况

ESI 更新时间	公路学院	信息工程学院	汽车学院	地质工程与测绘学院	环境科学与工程学院
2019.1.19	2	2	1	1	
2019.3.14		1		1	

2019.5.9	6			2	
2019.7.11	本期无热点论文				
2019.9.11					4

从本期 ESI 数据可以看出，公路学院一直保持增长趋势，而且本期增幅最大，环境科学与工程学院近期表现也比较突出，本期高被引论文比上期有很大增幅。而信息工程学院、汽车学院、地质工程与测绘学院、地球科学与资源学院、材料科学与工程学院、理学院近四期表现一直比较稳定。其他尚未有 ESI 高被引论文分布的院系仍需努力。

从高被引论文作者分布来看，我校已经涌现出一些发文量、被引频次较高的作者，我们对高被引论文以及热点论文的作者（仅限第一作者身份发表的论文）分布进行了统计分析，详见表 6。

表 6　我校高被引论文作者分布情况（仅统计第一作者）

作者	高被引论文	所属院系
Li, Peiyue	9	环境科学与工程学院
Lai, Jinxing	6	公路学院
Qiu, Junling	5	公路学院
Luo, Xianglong	3	公路学院
Qi, D. H.	3	汽车学院
Ren, Rui	3	公路学院
Zhou, Zhijun	3	公路学院
Fan, Xiang	2	公路学院
Guo, Feng	2	环境科学与工程学院
Qiu, Kun-Feng	2	地质工程与测绘学院
Wang, Zhi-Feng	2	公路学院
Bao, Xiongxiong	1	理学院
Dong, Ming	1	信息工程

He, Siyue	1	公路学院
He, Song	1	环境科学与工程学院
Hu, Zhao	1	公路学院
Hui, Fei	1	信息工程学院
Jia, Zhifeng	1	环境科学与工程学院
Kuang, Dongliang	1	材料科学与工程学院
Li, Yao	1	公路学院
Li, Youyun	1	公路学院
Song Xueli	1	理学院
Wang, Guiping	1	信息工程学院
Wang, Xiuling	1	公路学院
Wang, Ya-Qiong	1	公路学院
Wang, Yonggang	1	公路学院
Wu, Jianhua	1	环境科学与工程学院
Xie, Shaobo	1	汽车学院
Xin, Qi	1	汽车学院
Yang, Liu	1	公路学院
Yu, Shaowei	1	汽车学院
Zhang, Wei	1	信息工程学院
Zhang, Yuting	1	环境科学与工程学院
Zhuang, Jianqi	1	地质工程与测绘学院

二．我校 ESI 前 1%学科概况与预测

本期我校工程学学科依然保持全球排名前 1%，在工程学领域共发表 ESI 论文 1，386 篇，被引用 6，686 次，其中高被引论文 31 篇，本期全球有 1468 所机构（大陆机构 200 所）的工程学学科进入 ESI 全球排名前 1%行列，我校位列 747

位（大陆机构排名 98 位）。表 7 为近五期我校工程学 ESI 排名情况。

表 7　我校工程学 ESI 排名情况（近六期数据比较）

学科（更新时间）	中国大陆机构排名	ESI 全球排名	论文数	被引频次
工程学（2018.11.16）	92	904	998	4，434
工程学（2019.1.19）	92	879	1，080	4，880
工程学（2019.3.14）	93	863	1，140	5，283
工程学（2019.5.9）	101	790	1，190	5，578
工程学（2019.7.11）	101	769	1，276	6，153
工程学（2019.9.11）	98	747	1，386	6，686

除了工程学，我校还有其他学科近期表现良好。选择 2009-2019 年来我校 ESI 各学科发文数量前 5 的学科：工程、材料科学、地学、化学和环境\生态学进行了 CNCI 值的分析，详见图 1。

如图 1，可以看到，工程和地球科学为长安大学优势学科；环境\生态学研究水平高于世界平均值，发文数量还不是很高，可看作潜力学科；而材料科学发文量比较高，但 CNCI 值低于世界平均水平。通过 CNCI 值的分析可以得知我校地球科学的研究水平已经达到较高的水平，因此在地球科学领域突破 ESI 前 1%是极为有可能的。图 2 对 22 个 ESI 学科的阈值与我校各学科的被引频次进行了比较之后，进一步对具有潜力进入全球前 1%的学科进行了预测。

从本期 ESI 数据可以看出，我校目前最有潜力进入全球前 1%的学科依然是地球科学，已经非常接近了，其次是环境/生态学，也有很大潜力。但是其他学科要有所突破进入全球前 1%，还具有相当大的难度，还需要全校科研人员共同努力。

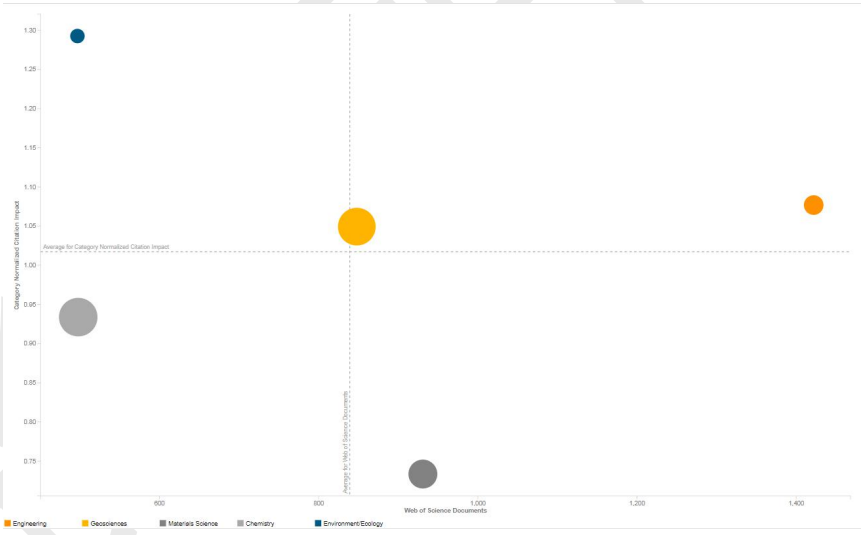

图 1　2009-2019 年我校发文量 TOP5 的 ESI 学科的 CNCI 值表现（数据统计时间截止：2019.9.11）

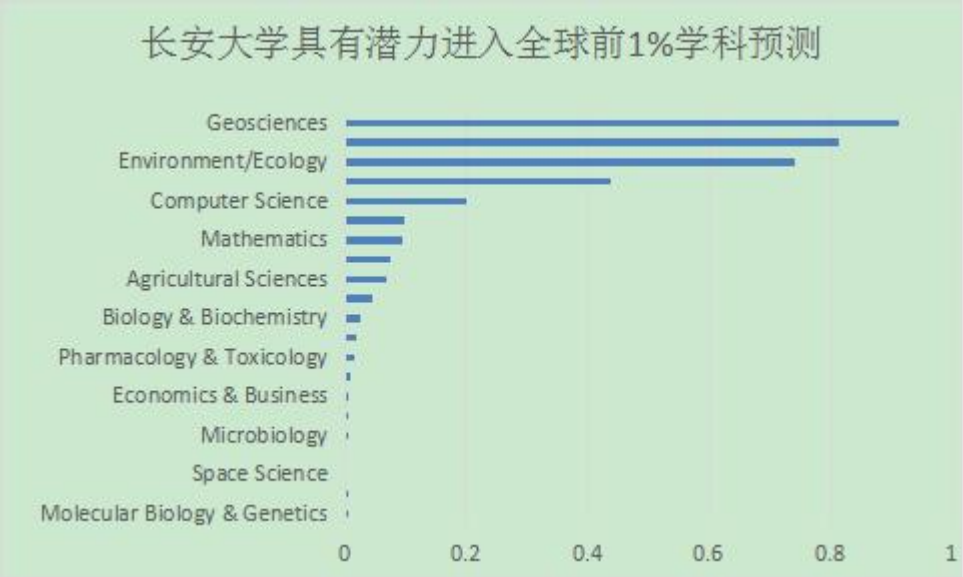

图 2　长安大学具有潜力进入全球前 1%学科预测

本期全球有 697 所机构的地球科学进入全球前 1%，中国大陆有 50 所机构的地球科学进入前 1%排位，下表 8 是地球科学目前已经进入全球前 1%的 50 所大陆机构的论文情况，而我校地球科学虽然每期的表现值都非常接近 ESI 的阈值，但是仍旧存在一些差距。

表 8　地球科学学科进入全球前 1%的大陆 50 所机构的论文情况

序号	机构名称	Web of Science 论文数	总被引次数	篇均被引次数	顶尖论文数	全球 ESI 地球科学排位
1	中国科学院	33088	431798	13.05	443	2
2	中国地质大学	9869	123566	12.52	140	24
3	中国科学院地质与地球物理研究所	5221	93347	17.88	88	36
4	中国科学院大学	9794	88934	9.08	69	40
5	北京大学	4261	77480	18.18	100	54
6	中国科学院大气物理研究所	4269	65824	15.42	92	65
7	中国地质科学院	3944	61703	15.64	66	78
8	南京大学	3872	53121	13.72	48	93
9	中国科学院广州地球化学研究所	2236	44818	20.04	40	118
10	北京师范大学	3000	40699	13.57	60	133
11	中国气象局	2811	37878	13.47	44	144
12	武汉大学	3577	34545	9.66	65	160
13	清华大学	1914	31982	16.71	68	178

14	南京信息工程大学	3503	29162	8.32	49	201
15	中国科学院地理科学与自然资源研究所	2323	28175	12.13	31	206
16	中国地震局	2829	28161	9.95	19	207
17	兰州大学	1794	26324	14.67	31	224
18	中国石油大学	4147	26096	6.29	67	227
19	西北大学	1164	25311	21.74	29	236
20	中国科学技术大学	1837	24444	13.31	25	246
21	中国海洋大学	2642	24001	9.08	29	251
22	中国气象科学院	1815	23634	13.02	33	261
23	中国矿业大学	2264	20808	9.19	34	287
24	中国科学院地球环境研究所	1030	20592	19.99	30	292
25	中国石油总公司	3018	20532	6.80	18	293
26	中国科学院寒冷干旱地区环境工程研究所	1197	20531	17.15	24	294
27	吉林大学	1986	18648	9.39	14	328
28	西安交通大学	834	18251	21.88	21	332
29	同济大学	1739	16232	9.33	13	368
30	中山大学	1748	16028	9.17	23	374
31	国家海洋局	2156	14477	6.71	8	410
32	浙江大学	1478	12632	8.55	12	446
33	中国科学院遥感与数字地球研究所	1765	12190	6.91	22	457
34	中国科学院南海海洋研究所	1207	11629	9.63	9	470
35	中南大学	1378	11621	8.43	32	471
36	华东师范大学	811	10179	12.55	14	512
37	中国石油化工集团公司	1635	10016	6.13	12	516
38	成都理工大学	1311	9971	7.61	8	517
39	中国科学院海洋研究所	1079	9761	9.05	8	524
40	河海大学	1189	9066	7.62	11	547
41	中国科学院新疆生态地理研究所	658	8614	13.09	13	566
42	中国地质调查局	1127	8474	7.52	10	570
43	复旦大学	599	7684	12.83	10	612
44	中国科学院南京地理湖沼研究所	508	7502	14.77	7	620

45	厦门大学	719	7454	10.37	11	627
46	中国科学院脊椎动物古生物学与古人类学研究所	683	7250	10.61	1	634
47	中国科学院大地测量与地球物理研究所	703	7164	10.19	18	640
48	南京师范大学	536	6751	12.60	17	666
49	中国环境科学研究所	266	6481	24.36	9	688
50	西安电子科技大学	766	6453	8.42	2	691

长安大学一级学科与 ESI 学科的对照：

ESI 是按照 SCI/SSCI 的期刊属性来对学科进行分类，这种分类体系和我校的学科设置不能完全匹配，因此我校如果要在相关学科进入全球前 1%，全校各个学科的师生都需要在该学科领域做出贡献。

表 9　ESI 学科与我校的学科对照表

ESI 学科	对应的我校一级学科	对应的学院
工程学	交通运输工程	公路学院
	材料科学与工程	材料科学与工程学院
	测绘科学与技术	地质工程与测绘学院
	环境科学与工程	环境科学与工程学院
	水利工程	环境科学与工程学院
	土木工程	建筑工程学院
	机械工程	汽车学院
地球科学	地质学	地质工程与测绘学院
		地球科学与资源学院
材料科学	材料科学与工程	材料科学与工程学院
		电子与控制工程学院
社会科学	管理科学与工程	经济与管理学院
	地理学	地质工程与测绘工程学院
经济与商业	经济学	经济与管理学院

注：表格中所有统计数据截止到 2019 年 9 月 11 日。

数据源简介：

Essential Science Indicators（基本科学指标，简称 ESI）是一个基于 Web of Science 核心合集数据库的深度分析型研究工具。ESI 可以确定在某个研究领域有影响力的国家、机构、论文和出版物，以及研究前沿。这种独特而全面的基于论文产出和引文影响力深入分析的数据是政府机构、大学、企业、实验室、出版公司和基金会的决策者、管理者、情报分析人员和信息专家理想的分析资源。通过 ESI，用户可以对科研绩效和发展趋势进行长期的定量分析。基于期刊论文发表数量和引文数据，ESI 提供对 22 个学科研究领域中的国家、机构和期刊的科研绩效统计和科研实力排名。

ESI 高被引论文（Highly Cited Paper）是指在近十多年的论文中按照同一年、同一 ESI 学科论文的被引频次由高到低进行排序，排在前 1%的论文。从理论上讲，如果一篇论文被引频次达到前 1%则说明该论文达到学科较高水平，具有较高的影响力。ESI 热点论文（Hot Paper）：是指近 2 年内发表的论文且在近 2 个月内被引次数排在相应学科领域全球前 1‰以内。

附录 1：长安大学 ESI 高被引论文（2019 年 9 月 11 日更新）

第 1 条，共 81 条

标题: Solute Geochemistry and Multivariate Analysis of Water Quality in the Guohua Phosphorite Mine, Guizhou Province, China

作者: Li, PY (Li, Peiyue); Tian, R (Tian, Rui); Liu, R (Liu, Rong)

来源出版物: EXPOSURE AND HEALTH 卷: 11 期: 2 特刊: SI 页: 81-94 DOI: 10.1007/s12403-018-0277-y 出版年: JUN 2019

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使用次数 (最近 180 天): 15

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摘要: Water plays a critical role in securing the mine production and domestic consumption in mining areas. This research was carried out to assess the water quality status and to identify the hydrochemical processes contributing to the dissolved constituents of the water in the Guohua phosphorite mine, Guizhou Province, China. Multivariate statistical techniques and correlation analysis were employed to gain a better understanding of the hydrogeochemical processes, and water quality for domestic and irrigation purposes was also assessed. The results indicate that groundwater and surface water quality in the phosphorite mine area is currently excellent with low concentrations of major ions, salinity, and trace metals. Whereas, E. coli is excessive in groundwater and surface water, and treatment is required before the water is used for drinking purpose. Groundwater and surface water are, however, suitable for agricultural purposes. The major ions are Ca2+, Mg2+, and HCO3-, and all water samples are predominantly of the HCO3-Ca<bold>Mg type</bold>. Hierarchical cluster analysis (HCA) indicates that the water chemistry in the mining area is regulated by natural processes that are controlled by the different geological formations and different hydrogeological settings. Carbonate dissolution/precipitation is the key factor controlling the concentrations of Ca2+, Mg2+, and HCO3-. Pyrite oxidation is an important factor influencing the concentration of SO42-, whereas evaporation is a minor factor regulating the water chemistry in the mining area. The study results are beneficial for sustainable water quality management in the mining area, and they will also interest mine hydrogeologists and practitioners of the world as a reference for relevant studies in other regions.

入藏号: WOS:000469217300002

语言: English

文献类型: Article

作者关键词: Water quality; Groundwater; Hydrochemistry; Phosphorite mine; Water-rock interaction

KeyWords Plus: MAJOR ION CHEMISTRY; GROUNDWATER QUALITY; HEALTH-RISK; STATISTICAL-ANALYSIS; SHALLOW GROUNDWATER; IRRIGATION PURPOSES; PENGYANG COUNTY; COAL-MINE; HYDROGEOCHEMISTRY; AREA

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ESI 热点论文: Y
输出日期: 2019-09-12
第 2 条，共 81 条
标题: Occurrence and Health Implication of Fluoride in Groundwater of Loess Aquifer in the Chinese Loess Plateau: A Case Study of Tongchuan, Northwest China
作者: Li, PY (Li, Peiyue); He, XD (He, Xiaodong); Li, Y (Li, Yi); Xiang, G (Xiang, Gang)
来源出版物: EXPOSURE AND HEALTH　卷: 11　期: 2　特刊: SI　页: 95-107　DOI: 10.1007/s12403-018-0278-x　出版年: JUN 2019
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被引频次合计: 25
使用次数 (最近 180 天): 18
使用次数 (2013 年至今): 18
引用的参考文献数: 52
摘要: This study was carried out to delineate the occurrence and spatial distribution of groundwater fluoride in a loess area of China and to determine the geochemical and anthropogenic factors that influence its concentration. Water quality was assessed for drinking purpose by comparing with the national and WHO drinking water guidelines, and the impacts of fluoride on human health were also quantified using the health risk assessment model recommended by the USEPA. The results demonstrate that groundwater in the study area is slightly alkaline in nature, and its quality is generally good except slightly excessive TDS, TH, Na+, F-, and nitrate at some local locations. High-fluoride groundwater is mainly distributed in the southeast part of the study area, which is in accordance with the groundwater flow direction in this area. Groundwater fluoride is mainly of natural origin and is dominantly controlled by natural factors such as pH, specific hydrochemical environment, ion exchange, and saturation state of minerals. Fluoride contributes the most to the total health risk in the present study. Children are at higher health risk than adults in this area. Establishing central water supply system and rainwater harvesting

system are suggested to guarantee safe drinking water supply in this area.
入藏号: WOS:000469217300003
语言: English
文献类型: Article
作者关键词: Fluoride occurrence; Health risk assessment; Water quality assessment; Groundwater environment; Loess Plateau
KeyWords Plus: SHALLOW GROUNDWATER; QUALITY ASSESSMENT; POLLUTION SOURCES; ANDHRA-PRADESH; WATER-QUALITY; CONTAMINATION; AREA; DISTRICT; PART; PROVINCE
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输出日期: 2019-09-12
第 3 条，共 81 条
标题: Hydrogeochemical Characteristics, Groundwater Quality, and Health Risks from Hexavalent Chromium and Nitrate in Groundwater of Huanhe Formation in Wuqi County, Northwest China
作者: He, S (He, Song); Wu, JH (Wu, Jianhua)
来源出版物: EXPOSURE AND HEALTH 卷: 11 期: 2 特刊: SI 页: 125-137 DOI: 10.1007/s12403-018-0289-7 出版年: JUN 2019
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使用次数 (最近 180 天): 17
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引用的参考文献数: 43
摘要: This study was carried out to investigate the current status of groundwater quality in Wuqi County, northwest China. The health risk assessment was also performed to quantify the negative impacts of hexavalent chromium (Cr6+) and nitrate (NO3-) in groundwater on human health by fully considering the gender and age of local residents. For this study, thirty groundwater samples were collected from wells and boreholes distributed in the study area and analyzed for pH, total dissolved solids (TDS), total hardness (TH), major ions (Na++K+, Ca2+, Mg2+, HCO3-, SO42-, and Cl-), NO3-, nitrite (NO2-), and Cr6+. Statistical analysis and graphical approaches were adopted to delineate the physicochemical parameters and hydrochemistry of groundwater. Fuzzy comprehensive method was applied in this study to appraise overall groundwater quality. The model recommended by the Ministry of Environmental Protection of the People's Republic of China was selected to assess the non-carcinogenic and carcinogenic risks caused by Cr6+ and NO3- through drinking water intake. Indicated by statistical mean values, the order of cations is Na++K+>Ca2+>Mg2+, and that of anions is SO42->Cl->HCO3-. The averages of TH, TDS, NO3-, and NO2- are 432, 1253, 23.2, and 0.099mg/L, respectively. Piper diagram indicates that groundwater in the study area is SO4<bold>Cl</bold>-Na type, SO4<bold>Cl</bold>-Ca<bold>Mg type</bold>, and HCO3-Na type. Gibbs diagrams suggest that the major ion chemistry of groundwater in the area is governed by rock weathering and water-rock interaction, while evaporation plays a minor role. According to the results of groundwater quality assessment, over one-third (36.67%) of the groundwater samples are of poor or very poor quality. Through oral pathway, female and male adults in the study area face acceptable non-carcinogenic risks, while children face unacceptable non-carcinogenic risks caused by Cr6+ and NO3-. Both children and adults face unacceptable carcinogenic risks from Cr6+. In addition, children face higher carcinogenic risks than females and males owing to smaller body weight than adults. This study may provide local authorities with insights into making scientific decisions for sustainable groundwater exploitation and efficient groundwater environmental protection.
入藏号: WOS:000469217300005
语言: English
文献类型: Article
作者关键词: Groundwater chemistry; Groundwater quality; Fuzzy comprehensive method; Health risks; Hexavalent chromium; Nitrate
KeyWords Plus: MAJOR ION CHEMISTRY; SHALLOW GROUNDWATER; SOIL SALINIZATION; WATER-QUALITY; CONTAMINATION; AREA; BASIN; PLAIN; RIVER
地址: [He, Song; Wu, Jianhua] Changan Univ, Sch Environm Sci & Engn, 126 Yanta Rd, Xian 710054, Shaanxi, Peoples R China.
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开放获取: Bronze
ESI 高被引论文: Y
ESI 热点论文: N
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第 4 条，共 81 条
标题: A review on land subsidence caused by groundwater withdrawal in Xi'an, China
作者: Wang, YQ (Wang, Ya-Qiong); Wang, ZF (Wang, Zhi-Feng); Cheng, WC (Cheng, Wen-Chieh)
来源出版物: BULLETIN OF ENGINEERING GEOLOGY AND THE ENVIRONMENT 卷: 78 期: 4 页: 2851-2863 DOI: 10.1007/s10064-018-1278-6 出版年: JUN 2019
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摘要: This paper presents a review on the land subsidence caused by groundwater withdrawal in Xi'an, China. With the increasing demands of people's livelihood and economy during the urbanization process, Xi'an has suffered severe hazards due to land subsidence caused by the excessive exploitation of groundwater since the 1960s. According to past records, the development of land subsidence in Xi'an can be divided into three stages; i) preliminary stage (1959 to 1971), ii) rapid development stage (1972 to 1990), and iii) slow development stage (1991 to present). In the 1990s, the annual groundwater withdrawal volume reached the maximum value of about 1388x10(6)m(3)/year, and the annual land subsidence also reached the maximum value (about 130mm/year). The policy for controlling groundwater withdrawal was announced by the Xi'an Municipal Government in 1996, and then the land subsidence rate showed a significant descending tendency. Many researchers developed a series of approaches to yield the prediction of land subsidence caused by groundwater withdrawal, which can be divided into three categories: i) mathematical statistics approaches; ii) numerical approaches; iii) artificial intelligence approaches. Not only are the approaches' advantages and disadvantages analyzed in this paper, but three emerging investigations on land subsidence in Xi'an are also discussed. The three emerging investigations aim to: i) analyze the relationship between land subsidence and ground fissures, ii) search the monitoring techniques available for obtaining more accurate data, and iii) investigate the effect of sand particle crushing under high stress level on the development of land subsidence.
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语言: English
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作者关键词: Land subsidence; Groundwater withdrawal; Prediction approaches; Xi'an
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ESI 热点论文: N
输出日期: 2019-09-12
第 5 条，共 81 条
标题: The relation between working conditions, aberrant driving behaviour and crash propensity among taxi drivers in China

作者: Wang, YG (Wang, Yonggang); Li, LC (Li, Linchao); Prato, CG (Prato, Carlo G.)
来源出版物: ACCIDENT ANALYSIS AND PREVENTION 卷: 126 特刊: SI 页: 17-24 DOI: 10.1016/j.aap.2018.03.028 出版年: MAY 2019
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被引频次合计: 10
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使用次数 (2013 年至今): 9
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摘要: Although the taxi industry is playing an important role in Chinese everyday life, little attention has been posed towards occupational health issues concerning the taxi drivers' working conditions, driving behaviour and road safety. A cross-sectional survey was administered to 1021 taxi drivers from 21 companies in four Chinese cities and collected information about (i) sociodemographic characteristics, (ii) working conditions, (iii) frequency of daily aberrant driving behaviour, and (iv) involvement in property-damage-only (PDO) and personal injury (PI) crashes over the past two years. A hybrid bivariate model of crash involvement was specified: (i) the hybrid part concerned a latent variable model capturing unobserved traits of the taxi drivers; (ii) the bivariate part modelled jointly both types of crashes while capturing unobserved correlation between error terms. The survey answers paint a gloomy picture in terms of workload, as taxi drivers reported averages of 9.4 working hours per day and 6.7 working days per week that amount on average to about 63.0 working hours per week. Moreover, the estimates of the hybrid bivariate model reveal that increasing levels of fatigue, reckless behaviour and aggressive behaviour are positively related to a higher propensity of crash involvement. Lastly, the heavy workload is also positively correlated with the higher propensity of crashing, not only directly as a predictor of crash involvement, but also indirectly as a covariate of fatigue and aberrant driving behaviour. The findings from this study provide insights into potential strategies for preventive education and taxi industry management to improve the working conditions and hence reduce fatigue and road risk for the taxi drivers.
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语言: English
文献类型: Article
作者关键词: Taxi drivers; Working conditions; Fatigue; Aberrant driving behaviour; Crash propensity; Hybrid bivariate model
KeyWords Plus: PROFESSIONAL DRIVERS; QUESTIONNAIRE SURVEY; RISK; ACCIDENTS; FATIGUE; PREVALENCE; CHOICE; HEALTH; MODEL
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标题: Seismic Response of Aeolian Sand High Embankment Slopes in Shaking Table Tests
作者: Zhou, ZJ (Zhou, Zhijun); Lei, JT (Lei, Jiangtao); Shi, SB (Shi, Shaobo); Liu, T (Liu, Tong)
来源出版物: APPLIED SCIENCES-BASEL 卷: 9 期: 8 文献号: 1677 DOI: 10.3390/app9081677 出版年: APR 2 2019
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摘要: Aeolian sand high embankments are always damaged by earthquakes; however, little research has addressed this so far. In this study, shaking table tests were conducted on three aeolian sand high embankment models. Based on the shear failure mechanism of aeolian sand, the seismic responses of model embankments were analyzed. When seismic waves were inputted, the horizontal acceleration magnification (HAM) of three models always exceeded 1.0, and showed an increasing trend with height. Furthermore, according to the HAM change rules of three models under different input peak accelerations, the destruction of model embankments under earthquakes includes three stages: the reflected wave emergence (RWE) stage, the reflected wave strengthening (RWS) stage, and the acceleration magnification attenuation (AMA) stage. According to this definition, models with slopes of 1/1.2 and 1/0.8 experienced all three stages during tests, and the critical horizontal acceleration transform from the RWS stage to the AMA stage appeared. The model with a slope of 1/1.5 only experienced RWE and RWS stages during the test. At the end of the tests, the macroscopic instability mechanisms of all three models were studied, which were found to match the distribution law of HAM during tests and the destruction stage definition.
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语言: English
文献类型: Article
作者关键词: seismic response; aeolian sand high embankment; shaking table test; instability mechanism
KeyWords Plus: EARTHQUAKES; BEHAVIOR; MODELS
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第 7 条，共 81 条
标题: Influence of angularity and roughness of coarse aggregates on asphalt mixture performance
作者: Kuang, DL (Kuang, Dongliang); Wang, XT (Wang, Xueting); Jiao, Y (Jiao, Yuan); Zhang, B (Zhang, Ben); Liu, YJ (Liu, Yanjin); Chen, HX (Chen, Huaxin)
来源出版物: CONSTRUCTION AND BUILDING MATERIALS 卷: 200 页: 681-686 DOI: 10.1016/j.conbuildmat.2018.12.176 出版年: MAR 10 2019
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摘要: The damage of asphalt mixture occurs in asphalt-aggregate interphase. The strength was directly associated with the overall performance of mixture. In this paper, Marshall test was applied to investigate the high-temperature stability. The high-temperature stability, water stability and low-temperature performance of five types of asphalt mixtures were tested through Marshall test, and the correlation between road performance dynamic stability, freeze-thaw split strength ratio, and low-temperature flexural tensile strength and average angular coefficient of coarse aggregate was studied. Moreover, the correlations of asphalt-aggregate interphase strength to the pavement performance index of asphalt mixture were also established. (C) 2018 Elsevier Ltd. All rights reserved.

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文献类型: Article
作者关键词: Interphase strength; Aggregate; Asphalt mixtures; Characteristics
KeyWords Plus: MORPHOLOGY
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标题: Particle size distribution effects on deformation properties of graded aggregate base under cyclic loading
作者: Lin, H (Lin, Hang); Wang, H (Wang, Hu); Fan, X (Fan, Xiang); Cao, P (Cao, Ping); Zhou, KF (Zhou, Kefeng)
来源出版物: EUROPEAN JOURNAL OF ENVIRONMENTAL AND CIVIL ENGINEERING 卷: 23 期: 3 页: 269-286 DOI: 10.1080/19648189.2016.1276480 出版年: MAR 4 2019
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摘要: The highway base layers performance is significantly affected by its component of particles. A particle flow code numerical simulation study was conducted to determine particle size distribution (PSD) effects on deformation properties of highway base layers under cyclic loading. Nine kinds of graded aggregate were chosen. A series of analysis, the stress-strain response, deformation characteristics, and dynamic elastic modulus of the graded aggregate were performed through dynamic biaxial numerical simulation. Under vibratory loading, the fine particles filled the interspace of the coarse particles, and with re-orientation of the fine particles account for plastic strain. After the compaction of granular material, the interaction between fine particles and coarse particles contributes to the increase in dynamic elastic modulus. And there exists an optimum PSD of fine particles to yield maximum dynamic elastic modulus.
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语言: English
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作者关键词: deformation properties; graded aggregate; particle size distribution; cyclic loading; micromechanics
KeyWords Plus: BEHAVIOR; BALLAST; SOILS
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第 9 条，共 81 条
标题: Urban transport carbon dioxide (CO2) emissions by commuters in rapidly developing Cities: The comparative study of Beijing and Xi'an in China
作者: Yang, L (Yang, Liu); Wang, YQ (Wang, Yuanqing); Han, SS (Han, Sunsheng); Liu, YY (Liu, Yuanyuan)
来源出版物: TRANSPORTATION RESEARCH PART D-TRANSPORT AND ENVIRONMENT　卷: 68　特刊: SI　页: 65-83　DOI: 10.1016/j.trd.2017.04.026　出版年: MAR 2019
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摘要: To understand the changing relationships between commuting CO2 emissions (CCE), travel behavior and urban forms, this paper provides a comparative study between the typical Chinese cities of Beijing (more developed) and Xi'an (rapidly developing). Further, the effects of metro services on reducing CCE were explored, and comparative analysis on CCE between the inner sprawling suburbs and outer suburbs was conducted. It was found that: (i) the increases in CCE are several times larger than the increases in urban size, population, and economic developments; (ii) metro services reducing CCE near metro stations is not statistically significant, maybe because the proportions of car users near the metro stations are similar to the two cities' average levels, which is caused by their higher household income and the longer travel time using the metro; (iii) in Beijing, there are smallest CCE in the outer suburbs due to job-housing balances, short distance and large percentage of non-motorized mode uses while largest CCE in the inner sprawl suburbs due to car trips with long distance. These findings indicate that to cope with the rapidly increasing CCE, more attention should be paid to developing strong industry and real-estate simultaneously; the improvement in the feeder bus and public bicycle systems should also be reinforced to reduce the total travel time of metro users; and satellite cities with job-housing balance are greatly needed. The implications will benefit efforts to reduce CCE and mitigate global climate change, and they also provide empirical evidence and reference values for other global cities. (C) 2017 Elsevier Ltd. All rights reserved.
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语言: English
文献类型: Article
作者关键词: Urban sprawl; Travel pattern; Transport CO2 emission by commuters; Beijing; Xi'an; China
KeyWords Plus: GREENHOUSE-GAS EMISSIONS; RESIDENTIAL DENSITY; LAND-USE; TRANSIT; TRAVEL; FORM; CONSUMPTION; IMPACTS; UNCERTAINTY; CONNECTION
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标题: Pontryagin's Minimum Principle based model predictive control of energy management for a plug-in hybrid electric bus
作者: Xie, SB (Xie, Shaobo); Hu, XS (Hu, Xiaosong); Xin, ZK (Xin, Zongke); Brighton, J (Brighton, James)
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引用的参考文献数: 54
摘要: To improve computational efficiency of energy management strategies for plug-in hybrid electric vehicles (PHEVs), this paper proposes a stochastic model predictive controller (MPC) based on Pontryagin's Minimum Principle (PMP), which differs from widely used dynamic programming (DP)-based predictive methods. First, short-time speed forecasting is achieved using a Markov chain model, based on real-world driving cycles. The PMP- and DP-based MPCs are compared under four preview horizons (5 s, 10 s, 15 s and 20 s), and the results show that the computational time of the DP-MPC is almost four times of that in the PMP-MPC. Moreover, the influence of predication horizon length on computational time and energy consumption is examined. Given a preview horizon of 5 s, the PMP-MPC holds a total energy consumption cost of 7.80 USD and computational time per second of 0.0130 s. When the preview horizon increases to 20 s, the total cost is 7.77 USD with the computational time per second increasing to 0.0502 s. Finally, DP, PMP, and rule -based strategies are contrasted to the PMP-MPC method, further demonstrating the promising performance and computational efficiency of the proposed methodology.
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文献类型: Article
作者关键词: Plug-in hybrid electric bus; Stochastic model predictive control; Pontryagin's Minimum Principle; Dynamic programming; Algorithmic efficiency
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REALIZATION; DESIGN; SYSTEM; COST
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标题: New multiple stages two-step complete in phase algorithm with improved characteristics for second order initial/boundary value problems
作者: Wang, GP (Wang, Guiping); Simos, TE (Simos, T. E.)
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摘要: In the present paper and for the first time in the bibliography, we form a new multiple stages multistep complete in phase algorithm with meliorated properties. A detailed theoretical and computational study is also represented. The competence of the new algorithm is tested using systems of coupled differential equations of the Schrodinger type.
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语言: English
文献类型: Article
作者关键词: Phase-lag; Derivative of the phase-lag; Initial value problems; Oscillating solution; Symmetric; Hybrid; Multistep; Schrodinger equation; 65L05
KeyWords Plus: FINITE-DIFFERENCE PAIR; PREDICTOR-CORRECTOR METHOD; EXPLICIT 4-STEP METHOD; INITIAL-VALUE PROBLEMS; P-STABLE METHOD; TRIGONOMETRICALLY-FITTED METHODS; KUTTA-NYSTROM METHOD; NUMEROV-TYPE METHODS; NUMERICAL-SOLUTION;

SCHRODINGER-EQUATION
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第 12 条，共 81 条
标题: How Safe Is Safe Enough for Self-Driving Vehicles?
作者: Liu, P (Liu, Peng); Yang, R (Yang, Run); Xu, ZG (Xu, Zhigang)
来源出版物: RISK ANALYSIS 卷: 39 期: 2 特刊: SI 页: 315-325 DOI: 10.1111/risa.13116 出版年: FEB 2019
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摘要: Self-driving vehicles (SDVs) promise to considerably reduce traffic crashes. One pressing concern facing the public, automakers, and governments is "How safe is safe enough for SDVs?" To answer this question, a new expressed-preference approach was proposed for the first time to determine the socially acceptable risk of SDVs. In our between-subject survey (N = 499), we determined the respondents' risk-acceptance rate of scenarios with varying traffic-risk frequencies to examine the logarithmic relationships between the traffic-risk frequency and risk-acceptance rate. Logarithmic regression models of SDVs were compared to those of human-driven vehicles (HDVs); the results showed that SDVs were required to be safer than HDVs. Given the same traffic-risk-acceptance rates for SDVs and HDVs, their associated acceptable risk frequencies of SDVs and HDVs were predicted and compared. Two risk-acceptance criteria emerged: the tolerable risk criterion, which indicates that SDVs should be four to five times as safe as HDVs, and the broadly acceptable risk criterion, which suggests that half of the respondents hoped that the traffic risk of SDVs would be two orders of magnitude lower than the current estimated traffic risk. The approach and these results could provide insights for government regulatory authorities for establishing clear safety requirements for SDVs.
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作者关键词: Broadly acceptable risk criterion; expressed-preference approach; self-driving vehicles; socially acceptable risk; tolerable risk criterion
KeyWords Plus: RISK PERCEPTION; GENDER-DIFFERENCES; ACCEPTABLE RISK; NUCLEAR-POWER;

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标题: Public Acceptance of Fully Automated Driving: Effects of Social Trust and Risk/Benefit Perceptions
作者: Liu, P (Liu, Peng); Yang, R (Yang, Run); Xu, ZG (Xu, Zhigang)
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摘要: Automated driving (AD) is one of the most significant technical advances in the transportation industry. Its safety, economic, and environmental benefits cannot be realized if it is not used. To explain, predict, and increase its acceptance, we need to understand how people perceive and why they accept or reject AD technology. Drawing upon the trust heuristic, we tested a psychological model to explain three acceptance measures of fully AD (FAD): general acceptance, willingness to pay (WTP), and behavioral intention (BI). This heuristic suggests that social trust can directly affect acceptance or indirectly affect acceptance through perceived benefits and risks. Using a survey (N = 441), we found that social trust retained a direct effect as well as an indirect effect on all FAD acceptance measures. The indirect effect of social trust was more prominent in forming general acceptance; the direct effect of social trust was more prominent in explaining WTP and BI. Compared to perceived risk, perceived benefit was a stronger predictor of all FAD acceptance measures and also a stronger mediator of the trust-acceptance relationship. Predictive ability of the proposed model for the three acceptance measures was confirmed. We discuss the implications of our results for theory and practice.

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语言: English
文献类型: Article
作者关键词: Fully automated driving; public acceptance; risk/benefit perception; social trust; trust heuristic
KeyWords Plus: PERCEIVED RISK; TECHNOLOGY ACCEPTANCE; AUTONOMOUS VEHICLES; ATTITUDE FORMATION; USER ACCEPTANCE; BENEFITS; MODEL; ACCEPTABILITY; DETERMINANTS; INTENTION
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标题: Review of the flame retardancy on highway tunnel asphalt pavement
作者: Qiu, JL (Qiu, Junling); Yang, T (Yang, Tao); Wang, XL (Wang, Xiuling); Wang, LX (Wang, Lixin); Zhang, GL (Zhang, Guanglong)
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摘要: Though asphalt pavement is widely used in highway tunnels, the flammability of the asphalt pavement is still one significant topic for an in-depth study due to the serious consequences of the tunnel fire. This paper presents a review of the flame retardancy on highway tunnel asphalt pavement. Firstly, the combustion of asphalt pavement and cement pavement is compared on the basis of highway tunnel fire, the commonly used asphalt flame-retardant evaluation standards are analyzed. Secondly, flame-retardant technologies including flame retardant, component flame-retardant method and porous structure flame-retardant method are summarized.

Furthermore, the application of nanotechnology in flame-retardant asphalt is reviewed. Finally, concluding remarks and important future investigation directions are presented, which will be advantageous to future study the flame retardancy on highway tunnel asphalt pavement. (C) 2018 Elsevier Ltd. All rights reserved.
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作者关键词: Highway tunnel; Asphalt pavement; Flame-retardant method; Evaluation of flame retardancy; Nanotechnology
KeyWords Plus: WARM MIX ASPHALT; HIGH-TEMPERATURE PERFORMANCE; THERMAL-PROPERTIES; COMBUSTION MECHANISM; MOISTURE SUSCEPTIBILITY; MIXTURE DESIGN; CONCRETE; AGGREGATE; BEHAVIOR; NANOCLAY
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标题: Support System for Tunnelling in Squeezing Ground of Qingling-Daba Mountainous Area: A Case Study from Soft Rock Tunnels

作者: Wang, XL (Wang, Xiuling); Lai, JX (Lai, Jinxing); Garnes, RS (Garnes, Rodney Sheldon); Luo, YB (Luo, Yanbin)
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摘 要 : Tunnelling or undertaking below-ground construction in squeezing ground can always present many engineering surprises, in which this complicated geology bring a series of tunnelling difficulties. Obviously, if the major affecting factors and mechanism of the structure damage in these complicated geological conditions are determined accurately, fewer problems will be faced during the tunnel excavation. For this study, reference is made to four tunnel cases located in the Qingling-Daba mountainous squeezing area that are dominated by a strong tectonic uplift and diversified geological structures. This paper establishes a strong support system suitable for a squeezing tunnel for the purpose of addressing problems exhibited in the extreme deformation of rock mass, structure crack, or even failure during excavation phase. This support system contains a number of temporary support measures used for ensuring the stability of tunnel face during tunnelling. The final support system was constructed, including some key techniques such as the employment of the foot reinforcement bolt (FRB), an overall strong support measure, and more reserved deformation. Results in this case study showed significant effectiveness of the support systems along with a safe and efficient construction process. The tunnel support system proposed in this paper can be helpful to support design and provide sufficient support and arrangement before tunnel construction in squeezing ground.
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标题: Traffic Flow Prediction during the Holidays Based on DFT and SVR
作者: Luo, XL (Luo, Xianglong); Li, DY (Li, Danyang); Zhang, SR (Zhang, Shengrui)
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摘要: With the implementation of the freeway free policy during the holidays, traffic congestion in the freeway becomes a common phenomenon. In order to alleviate traffic pressure, traffic flow prediction during the holidays has become a problem of great concern. This paper proposes a hybrid prediction methodology combining discrete Fourier transform (DFT) with support vector regression (SVR). The common trend in the traffic flow data is extracted using DFT by setting an appropriate threshold, which is predicted by extreme extrapolation of the historical trend. The SVR method is applied to predict the residual series. The experimental results with measured data collected from the toll stations in Jiangsu province of China show that the proposed algorithm has higher accuracy compared with the traditional method, and it is an efficient method for traffic flow prediction during the holidays.
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标题: Modeling of Loess Soaking Induced Impacts on a Metro Tunnel Using a Water Soaking System in Centrifuge
作者: Zhang, YW (Zhang, Yuwei); Weng, XL (Weng, Xiaolin); Song, ZP (Song, Zhanping); Sun, YF (Sun, Yufeng)
来源出版物: GEOFLUIDS 文献号: UNSP 5487952 DOI: 10.1155/2019/5487952 出版年: 2019
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摘要: The collapsibility is one of the key properties for loess. Harmful impacts on the metro tunnels could be obviously subjected to the soaking collapsibility in collapsible loess. However, loess soaking cannot be effectively modeled by the existing centrifugal test equipment (CTE) due to its inherent limitations. In the present paper, a water soaking system (WSS) was improved based on the existing CTE for simulating various loess soaking conditions. The WSS was made of a water storage subsystem and a water distribution subsystem. Some tests were conducted to show the capability of the improved WSS in centrifugal model tests firstly, then it was used to carry out centrifugal model tests on a metro tunnel under full-range and half-range foundation soaking conditions with different soaking depths. The impacts of various soaking conditions on the mechanical properties of the metro tunnel were discussed in detail.
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标题: Optimization Analysis of Settlement Parameters for Postgrouting Piles in Loess Area of Shaanxi, China
作者: Zhou, ZJ (Zhou, Zhijun); Zhu, SS (Zhu, Shanshan); Kong, X (Kong, Xiang); Lei, JT (Lei, Jiangtao); Liu, T (Liu, Tong)
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摘要: The settlement calculation of postgrouting piles is complex and depends on the calculation method and parameters. Static load tests were conducted to compare the settlement characteristics of nongrouting and postgrouting piles, and three vital parameters in the layer-wise summation method were revised to predict the settlement of postgrouting piles. The elastic compression coefficient was deduced based on the Mindlin-Geddes method by considering the influence of the change in the pile side resistance distribution and end resistance ratio on the elastic compression after grouting. The relationship between the compression modulus and soil gravity stress and cone penetration resistance were established, respectively, using experimental data. The optimum value of the settlement empirical coefficient was determined using regional data. Finally, we used the postgrouting pile of the Wuqi-Dingbian expressway as a practical example. The results obtained from the layer-wise summation method after parametric optimization were close to the measured values. The results of this study provide reference data and guidance for the settlement calculation of postgrouting piles in this area.
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标题: A New Soil-Water Characteristic Curve Model for Unsaturated Loess Based on Wetting-Induced Pore Deformation
作者: Zhang, YW (Zhang, Yuwei); Song, ZP (Song, Zhanping); Weng, XL (Weng, Xiaolin); Xie, YL (Xie, Yongli)
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摘要: The soil-water characteristic curve (SWCC) is the basis for describing seepage, strength, and constitutive model of unsaturated soil. The existing SWCC models do not work accurately for evaluating loess, because they do not consider the pore deformation that is induced by wetting. The present study develops a new SWCC model for unsaturated loess. The model considers the effect of wetting-induced pore deformation (WIPD) on the SWCC. The new model includes 6 parameters, which could be confirmed by laboratory tests. The pore volume function (PVF) was described by the WIPD. The shift factor xi(1i) and the compression factor xi(2i) were introduced into the model. The relationship between the void ratio e and xi(1i) and xi(2i) was established using the average pore radius. The new SWCC model for saturated loess was improved based on the classical van Genuchten (V-G) model. If the WIPD had not been considered, the new model would regress into the classical V-G model. SWCC tests of unsaturated loess with different void ratios were carried out to verify the new model. The model parameters were calibrated in the original state, and the SWCCs of different void ratios were predicted by the new model and found to be in good agreement with the test results.
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标题: Dynamic Failure Mode and Dynamic Response of High Slope Using Shaking Table Test
作者: Zhou, ZJ (Zhou, Zhijun); Ren, CN (Ren, Chenning); Xu, GJ (Xu, Guanjun); Zhan, HC (Zhan, Haochen); Liu, T (Liu, Tong)
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摘要: A shaking table test was performed to study the dynamic response and failure modes of high slope. Test results show that PGA amplification coefficients increased with increasing elevation and the PGA amplification coefficient of the concave slope was slightly larger than that of the convex slope. The slope type affected the dynamic response of the slope. The elevation amplification effect of the concave slope under seismic load was more significant than that of the convex slope; thus, the concave slope was more unstable than the convex slope. Additionally, the PGA amplification coefficient measured on the slope surface was always larger than that inside the slope, and the data show an increasing trend with the broken line. The dynamic amplification effect of the high slope was closely related to the natural frequency of the slope. Within a certain range, the higher the frequency, the more significant the amplification effect. The dynamic failure process of concave and convex slopes was studied through tests. Findings indicate that the dynamic failure modes of the concave slope are characterized by shoulder collapse, formation of the sliding surface, and integral sliding above the slope line. Dynamic failure modes of the convex slope are mainly slips in the soil layer and collapse of the slope near the slope line.
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标题: Spatiotemporal Traffic Flow Prediction with KNN and LSTM
作者: Luo, XL (Luo, Xianglong); Li, DY (Li, Danyang); Yang, Y (Yang, Yu); Zhang, SR (Zhang, Shengrui)
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摘要: The traffic flow prediction is becoming increasingly crucial in Intelligent Transportation Systems. Accurate prediction result is the precondition of traffic guidance, management, and control. To improve the prediction accuracy, a spatiotemporal traffic flow prediction method is proposed combined with k-nearest neighbor (KNN) and long short-term memory network (LSTM), which is called KNN-LSTM model in this paper. KNN is used to select mostly related neighboring stations with the test station and capture spatial features of traffic flow. LSTM is utilized to mine temporal variability of traffic flow, and a two-layer LSTM network is applied to predict traffic flow respectively in selected stations. The final prediction results are obtained by result-level fusion with rank-exponent weighting method. The prediction performance is evaluated with real-time traffic flow data provided by the Transportation Research Data Lab (TDRL) at the University of Minnesota Duluth (UMD) Data Center. Experimental results indicate that the proposed model can achieve a better performance compared with well-known prediction models including autoregressive integrated moving average (ARIMA), support vector regression (SVR), wavelet neural network (WNN), deep belief networks combined with support vector regression (DBN-SVR), and LSTM models, and the proposed model can achieve on average 12.59% accuracy improvement.
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标题: Characteristics of Dew Formation in the Semi-Arid Loess Plateau of Central Shaanxi Province, China
作者: Jia, ZF (Jia, Zhifeng); Wang, Z (Wang, Zhi); Wang, H (Wang, Hao)
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摘要: Compared to rain, dew is an important supplementary source of water for the survival of certain plants and animals in drylands. However, the hydrology of dew has not yet been fully investigated due to difficulties in measuring the amount and duration of it. In this study, a 3-year in-situ monitoring experiment was conducted from 2014 to 2016 in the semi-arid Sanyuan County, Shaanxi Province of China, using a leaf wetness sensor (LWS) and four associated meteorological instruments. Results showed that the average annual total dewfall was 32.8 mm with a daily maximum of 0.88 mm. The majority of daily dew occurred in the night from 18:00 to 8:00 with the maximum condensation rate occurring at around 4:00. The maximum dew residence time was about 18 h/day on the dew days in all seasons. However, the actual dew production period was about 14 h in spring (March-May), autumn (September-November), and winter (December-February), and only 11 h in summer (June-August). The maximum intensity and amount of dew always occurred in autumn (with an average amount of 12.2 mm or 37% of the annual total), followed closely by spring (11.4 mm, 35%), with much less in summer (6.6 mm, 20%) and winter (2.6 mm, 8%). The annual dew distribution by months showed a double crest variation, with two peaks in April-May and October-November, and two valleys in January-February and July. Comparatively, annual dewfall is only about 1/18th of the rainfall in this region, but the number of dew days (224 days, or 61% of year) is 2.6 times that of rain days (87 days, 24%), making dew a critical supplementary source of water for mitigating dry periods and supporting native plants and animals. Rain and dew are highly complementary as dew occurs in cloudless nights while the rain occurs in different and on much fewer occasions in the region. The dew amount was highly and positively correlated to the relative humidity of the air above the threshold of 81% ($r = 0.78$, $p < 0.01$), negatively correlated to the difference between air temperature T-a and dewpoint T-d, when (T-a - T-d) is less than 4 degrees C ($r = -0.66$, $p < 0.01$), and weakly correlated to wind speed (0.2 to 2 ms(-1)), wind direction, surface soil moisture, and temperature. In the Sanyuan region, two general wind directions, 30 degrees-90 degrees and 210 degrees-270 degrees, were more favorable for the formation of dew.
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标题: Statistical Analysis of Influence of Cover Depth on Loess Tunnel Deformation in NW China
作者: Hu, Z (Hu, Zhao); Du, K (Du, Ke); Lai, JX (Lai, Jinxing); Xie, YL (Xie, Yongli)
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摘要: Loess is a kind of special soil with structure and hydrocollapse behavior; due to the particularity of loess, the deformation regularity of the tunnel in loess shows different characteristics from those in rock. To ensure the safety of construction, crown settlement (CS) and horizontal convergence (HC) are widely used to assess the stability of the tunnel structural system. Based on statistical analysis, this study focused on analyzing the influence of cover depth on the deformation of surrounding rock of loess tunnels by ANOVA, and relationships between them were presented by regression analysis. The achieved results indicated that the influence of cover depth on deformation was not obvious in shallow tunnels, while the cover depth had a significant effect on deformation in deep tunnels. Based on the difference of influence of cover depth on deformation between shallow tunnels and deep tunnels, a method for determining the cover depth threshold (CDT) in the tunnel by statistical analysis was proposed. The horizontal and vertical deformations in shallow tunnels were discrete and obeyed the positive distribution, mainly concentrated within 200mm. The deformation allowance in shallow tunnels was recommended to be 200mm. In deep tunnels, as the cover depth increased, the deformation increased linearly, while the CS/HC decreased.
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标题: Structural Response of the Metro Tunnel under Local Dynamic Water Environment in Loess Strata
作者: Qiu, JL (Qiu, Junling); Qin, YW (Qin, Yiwen); Lai, JX (Lai, Jinxing); Wang, K (Wang, Ke); Niu, FY (Niu, Fangyuan); Wang, H (Wang, Hao); Zhang, GL (Zhang, Guanglong)
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摘要: The reasons, prevention, and control of loess disaster are of great concern in practice. In recent years, Xi'an city, China, has taken the leadership in large-scale construction of subway lines in the loess strata. To study the structural response of the tunnel in loess region under local hydrodynamic environment, an experimental testing in 1g as well as a numerical simulation were performed, in which the achieved results were verified and were found to be in good agreement. Furthermore, the results showed that when the water outlet point is above the lining, the overall stress of the lining is peanut shell, as the water pressure of the outlet point decreases, the tensile stress of the top and bottom of the lining increases, while the compressive stress on both sides decreases; the channel form of the flow to the lining changes with the variation of the position of the water outlet point. It is worth mentioning that in the process of water gushing, the closer to the water source, the greater surface subsidence is, and there is a positive correlation between water pressure and surface subsidence. This study is of significant benchmark for the construction, maintenance, and prevention of tunnel in loess strata under the influence of water environment.
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标题: Multi-criteria user equilibrium model considering travel time, travel time reliability and distance
作者: Sun, C (Sun, Chao); Cheng, L (Cheng, Lin); Zhu, SL (Zhu, Senlai); Han, F (Han, Fei); Chu, ZM (Chu, Zhaoming)
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摘要: This paper proposes a multi-criteria user equilibrium model considering travel time, travel time reliability and distance (MUE-TRD). This new model hypothesizes that for each user class and each origin-destination (O-D) pair no traveler can reduce either his or her reliable travel time or travel distance or both without worsening the other objective by unilaterally changing routes in their route choice decision process. Travel time budget which consists of travel time and travel time reliability is used to describe the reliable travel time. A maximum entropy

multi-criteria user equilibrium (ME-MUE) model is presented to address the non-uniqueness of the solution in MUE-TRD model. Furthermore, a route-based solution algorithm based on the partial linearization descent method (R-PLD) is developed to solve the ME-MUE model. Numerical examples are also provided to illustrate the essential ideas of the proposed model and the applicability of the developed solution algorithm. The results show that compared to traditional user equilibrium and travel time budget models, ME-MUE model is more consistent with the real trip process that the reliable travel time is increasing with the decreasing of travel distance in used routes; and the road traffic is smoother when using ME-MUE model to design the road network, thus ME-MUE model can reduce road traffic noise and air pollution in the urban road network. (C) 2017 Elsevier Ltd. All rights reserved.
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KeyWords Plus: BICRITERION TRAFFIC ASSIGNMENT; SHORTEST-PATH PROBLEM; NETWORK
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第 26 条，共 81 条
标题: Free vibration of nonlocal Timoshenko beams made of functionally graded materials by Symplectic method
作者: Zhang, K (Zhang, Kai); Ge, MH (Ge, Meng-Hua); Zhao, C (Zhao, Cheng); Deng, ZC (Deng, Zi-Chen); Xu, XJ (Xu, Xiao-Jian)
来源出版物: COMPOSITES PART B-ENGINEERING 卷: 156 页: 174-184 DOI: 10.1016/j.compositesb.2018.08.051 出版年: JAN 1 2019
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摘要: The aim of this paper is to numerically investigate the size-dependent vibration behavior of the nano-beam made of functionally graded materials (FGMs). The material properties of the FGMs are considered to vary throughout the thickness direction of the beams. Based on the non-local theory and the material and dimensions of the beams, the total energy including the potential and kinetic energy of the FGMs beams is obtained. The first-order governing differential equations in the Hamilton systems of the beam are constructed by introducing the dual variables and with the help of the variational principle. A precise-constant method and extended Wittrick-Williams algorithm are applied to obtain the structural frequencies of the nano-beams with the clamped-free and clamped-clamped boundary conditions. The model is verified by comparing the results with the data available in the literature. In the following, a study is carried out to find the effects of the nonlocal parameter, power index, and aspect ratio on the vibration of the FGMs nano-beams with the clamped-free and clamped-clamped boundary conditions respectively. The results show the soft effect of the nonlocal parameter on the structural vibration and the increase of the nonlocal parameter leads to the decrease of the frequency. The power index and aspect ratio also have significant effects on the vibration of the beams. The increase of the power index can increase the ceramic volume fraction in the FGMs, which leads to the increase of structural frequencies. The vibration of the beams can be controlled by choosing proper values of the power index and aspect ratio.
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语言: English
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作者关键词: Nonlocal Timoshenko beam; Size effect; Functionally graded materials; Hamilton system; Symplectic analysis
KeyWords Plus: CARBON NANOTUBES; WAVE-PROPAGATION; EULER-BERNOULLI; BUCKLING ANALYSIS; INTEGRAL MODEL; PLATES; NANOBEAMS; STRESS; INSTABILITY
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标题: Methane explosion accidents of tunnels in SW China
作者: He, SY (He, Siyue); Su, LJ (Su, Linjian); Fan, HB (Fan, Haobo); Ren, R (Ren, Rui)
来源出版物: GEOMATICS NATURAL HAZARDS & RISK 卷: 10 期: 1 页: 667-677 DOI: 10.1080/19475705.2018.1541826 出版年: JAN 1 2019
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摘要: This Express Letter reports three methane explosion accidents during tunnel construction in Southwest China. In recent years, tunnel construction of China is developing rapidly. The geological conditions of the tunnel passing through are extremely complex, especially, tunnels in coal strata increase rapidly, what's worse, many methane explosions occur during the tunnel construction. The backgrounds, causes and rescue operation of three methane explosion accidents situation are studied. Furthermore, we proposed relevant measures to prevent methane explosions of tunnels.
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作者关键词: Tunnel construction; SW China; methane explosion accidents; rescue operation; relevant measures
KeyWords Plus: SAFETY ASSESSMENT; BEHAVIOR
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第 28 条，共 81 条
标题: Typhoon triggered operation tunnel debris flow disaster in coastal areas of SE China
作者: Ren, R (Ren, Rui); Yu, DQ (Yu, Deqiang); Wang, LX (Wang, Lixin); Wang, K (Wang, Ke); Wang, H (Wang, Hao); He, SY (He, Siyue)
来源出版物: GEOMATICS NATURAL HAZARDS & RISK 卷: 10 期: 1 页: 562-575 DOI: 10.1080/19475705.2018.1535452 出版年: JAN 1 2019
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摘要: Typhoons have inflicted significant damage and loss of life to China, a large number of typhoon-rainstorm-debris flow-tunnel accidents occur in the southeastern coastal areas each year. Considering the disaster prevention and mitigation decision-making of disaster accidents in coastal areas and the reduction of regional economic losses, this Express Letter presents some typical accident scenes and rescue measures in recent years and analyses the hazard mechanism from three aspects. On this basis, we propose some suggestions such as the monitoring and early-warning system, which can provide a few references for reducing disaster losses and improving disaster treatments.
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文献类型: Article
作者关键词: Natural disaster; typhoon; debris flow; tunnel; hazard mechanism; disaster prevention; southeast coast of China
KeyWords Plus: CONSTITUTIVE MODEL
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标题: Numerical analysis of the compressive and shear failure behavior of rock containing multi-intermittent joints
作者: Fan, X (Fan, Xiang); Lin, H (Lin, Hang); Lai, HP (Lai, Hongpeng); Cao, RH (Cao, Rihong); Liu, J (Liu, Jie)
来源出版物: COMPTES RENDUS MECANIQUE 卷: 347 期: 1 页: 33-48 DOI: 10.1016/j.crme.2018.11.001 出版年: JAN 2019
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摘要: The failure behavior of intermittent jointed rocks is dependent on joint configurations. Joint inclination angle and continuity factor determined the joint arrangement in a rectangular numerical sample that was established by using the particle flow code approach. To identify the differences in the failure processes of identical intermittent jointed samples, uniaxial compressive and shear loads were applied on each sample. The crack growth path presented the four typical crack coalescence patterns identified via compressive and shear numerical tests. The crack coalescence pattern was associated with joint slant angle and continuity factor. The observed crack coalescence patterns of every sample with the same inclination angle and continuity factor were partially identical under compressive and shear loading. The differences in the crack patterns of the compressive and shear failure processes were described and compared. Typical compressive and shear failure processes were illustrated. Four compressive and three shear failure modes were identified. The cracking location and number of cracks in each failure mode were different. Additionally, the contact force evolution among particles during shear and compressive loading was different and likely accounted for the differences in cracking patterns. Under compressive or shear loading, the contact force concentration in each sample underwent the following stages: uniform distribution before loading, concentrated distribution, and scattered distribution after failure. (C) 2018 Academie des sciences. Published by Elsevier Masson SAS. All rights reserved.
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语言: English
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作者关键词: Direct shear test; Intermittent joint; Failure behavior; Contact force evolution; Particle flow code
KeyWords Plus: UNIAXIAL COMPRESSION; MECHANICAL-PROPERTIES; MASS MODELS; STRENGTH; COALESCENCE; CRACKING; FLAWS; SIMULATION; STRESS; MARBLE
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标题: Statistical analysis of fire accidents in Chinese highway tunnels 2000-2016
作者: Ren, R (Ren, Rui); Zhou, H (Zhou, Hui); Hu, Z (Hu, Zhao); He, SY (He, Siyue); Wang, XL (Wang, Xiuling)
来源出版物: TUNNELLING AND UNDERGROUND SPACE TECHNOLOGY 卷: 83 页: 452-460 DOI: 10.1016/j.tust.2018.10.008 出版年: JAN 2019
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摘要: Statistical analysis of tunnel fire accidents (TFAs) in China 2000-2016 as related to causes, characteristics, and consequences are discussed in this study with average frequency, time and locations, vehicle types, and regional distribution features revealed. Analysis results indicate that over half of TFAs in China result from vehicle technical problem. The average prevalence of TFAs has increased yearly since 2000 with the majority of incidences occurring in the summer and winter seasons and the autumn season experiencing the least. Fire accident prone locations tend to be at entrance and exit points of highway tunnels with heavy goods vehicles experiencing the largest proportion of TFAs at 58.2%. Countermeasures focusing on improving tunnel safety are recommended.
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作者关键词: Highway tunnel; Fire accident; Statistical analysis; Distribution characteristics; Countermeasures
KeyWords Plus: COLD REGION TUNNEL; TRAFFIC ACCIDENTS; DANGEROUS GOODS; ROAD; TECHNOLOGY; DAMAGE; STATE
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标 题 : SPREADING SPEEDS AND TRAVELING WAVES FOR SPACE-TIME PERIODIC NONLOCAL DISPERSAL COOPERATIVE SYSTEMS
作者: Bao, XX (Bao, Xiongxiong); Shen, WX (Shen, Wenxian); Shen, ZW (Shen, Zhongwei)
来源出版物: COMMUNICATIONS ON PURE AND APPLIED ANALYSIS 卷: 18 期: 1 页: 361-396 DOI: 10.3934/cpaa.2019019 出版年: JAN 2019
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摘要: The present paper is concerned with the spatial spreading speeds and traveling wave solutions of cooperative systems in space-time periodic habitats with nonlocal dispersal. It is assumed that the trivial solution u = 0 of such a system is unstable and the system has a stable space-time periodic positive solution u*(t, x). We first show that in any direction xi is an element of SN-1, such a system has a finite spreading speed interval, and under certain condition, the spreading speed interval is a singleton set, and hence, the system has a single spreading speed c*(xi) in the direction of xi. Next, we show that for any c > c*(xi), there are space-time periodic traveling wave solutions of the form u(t, x) = Phi(x ct xi, t, ct xi) connecting u* and 0, and propagating in the direction of xi with speed c, where Phi(x, t, y) is periodic in t and y, and there is no such solution for c < c*(xi). We also prove the continuity and uniqueness of space-time periodic traveling wave solutions when the reaction term is strictly sub-homogeneous. Finally, we apply the above results to nonlocal monostable equations and two-species competitive systems with nonlocal dispersal and space-time periodicity.
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语言: English
文献类型: Article
作 者 关 键 词 : Cooperative system; nonlocal dispersal; space-time periodic habitat; spreading speed; linear determinacy; traveling wave solution
KeyWords Plus: REACTION-DIFFUSION SYSTEMS; VOLTERRA COMPETITION MODEL; PRINCIPAL

EIGENVALUES; MONOSTABLE EQUATIONS; LINEAR DETERMINACY; VARIATIONAL PRINCIPLE; MONOTONE SEMIFLOWS; EVOLUTION SYSTEMS; EXISTENCE; FRONTS
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标题: A Study on the Mechanical Behavior and Statistical Damage Constitutive Model of Sandstone
作者: Wang, JB (Wang, Junbao); Song, ZP (Song, Zhanping); Zhao, BY (Zhao, Baoyun); Liu, XR (Liu, Xinrong); Liu, J (Liu, Jun); Lai, JX (Lai, Jinxing)
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摘要: Triaxial compression test results of sandstone indicate that the peak point strain, elastic modulus, peak deviatoric stress and residual deviatoric stress of the tested sandstone increase with increasing confining pressure, and the variations in them with the confining pressure can be described with a linear function, a logistic function, the generalized Hoek-Brown criterion and the linear Mohr-Coulomb criterion, respectively. Supposing that the rock material can be divided into an elastic part and a damaged part in the rock failure process, the deviatoric stress-strain relationship of the elastic part satisfies Hooke's law, while the damaged part provides residual deviatoric stress. On this basis, it was assumed the rock meso-element strength follows a composite power function distribution. Then, the damage evolution equation was deduced using a statistical method, and a new damage model, which can reflect the rock residual deviatoric stress, was proposed. The reasonability of the new model was verified using the test results of the sandstone. A comparison of the predicted and test results shows that this damage model can well simulate the deviatoric stress-strain response in the failure process of the tested sandstone. In particular, it can reflect the residual deviatoric stress after rock failure.

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语言: English
文献类型: Article
作者关键词: Sandstone; Mechanical behavior; Statistical damage constitutive model; Composite power function distribution; Residual deviatoric stress
KeyWords Plus: TRIAXIAL COMPRESSION; UNIAXIAL COMPRESSION; ROCK; STRENGTH; FAILURE; CRITERION; INTACT; SALT
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标题: Extreme deformation characteristics and countermeasures for a tunnel in difficult grounds in southern Shaanxi, China
作者: Lai, JX (Lai, Jinxing); Wang, XL (Wang, Xiuling); Qiu, JL (Qiu, Junling); Chen, JX (Chen, Jianxun); Hu, ZN (Hu, Zhinan); Wang, H (Wang, Hao)
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摘要: The Qingling-Bashan (QB) mountain region in southern Shaanxi mainly consists of strongly compressive zones from east to west, with tight folds and compressive fractures. There is a wide distribution of soft rocks of various types, such as phyllite and slate, accompanied by complex geological structures. Ironically, tunnel construction in these difficult grounds with complicated geological conditions embraces a high risk of extreme deformation due to various unpredictable reasons, which can frequently cause collapse and result in budget overruns during the construction period. Therefore, it is crucial to conduct effective countermeasures to eliminate or avoid such adverse impacts. This paper provides a case study on the Yingfeng tunnel (a tunnel constructed in soft rock consisting of a slate ground) based on a geological survey, indoor experiments and in situ monitoring. A successive rock mass deformation resulted in the tunnel lining seriously intruding into construction clearance and some other sections, even collapsing during the construction. The maximum displacement amount was 62.5cm, while the maximum deformation speed reached as high as 34.18mm/day. Additionally, to evaluate the construction impacts of tunnelling-induced geo-hazards, an investigation on extreme deformation was conducted. Considering the time-dependent features of the rock mass deformation, the constraint-convergence method was used to put forward applicable countermeasures in this paper. Finally, from the feedbacks of monitoring results, extreme deformation of the Yingfeng tunnel was effectively controlled.
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语言: English
文献类型: Article
作者关键词: Extreme deformation; Tunnelling in difficult grounds; Constraint-convergence method; Countermeasures; Monitoring
KeyWords Plus: REACTION CURVES; DEEP TUNNELS; NUMERICAL-ANALYSIS; SUPPORT-SYSTEM; ROCK; CONSTRUCTION; PREDICTION; MODEL; MOUNTAIN; BEHAVIOR
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标题: Investigating the Long-Term Settlement of a Tunnel Built over Improved Loessial Foundation Soil Using Jet Grouting Technique
作者: Qiu, JL (Qiu, Junling); Liu, HQ (Liu, Houquan); Lai, JX (Lai, Jinxing); Lai, HP (Lai, Hongpeng); Chen, JX (Chen, Jianxun); Wang, K (Wang, Ke)
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摘要: Postconstruction settlement that occurs before a tunnel is in operation may significantly influence the tunnel's long-term stability. The current study investigates such a tunnel, a three-lane superlarge section tunnel in Gansu Province, China, to assess the long-term settlement performance of a loess tunnel using reinforcement from vertical jet grouting piles. A three-dimensional finite-element model, validated through field observations, is employed to simulate soil consolidation behavior. Results indicate that the long-term settlement, as determined by the finite-element method (FEM), corresponds with field investigation results. Specifically, most of the Fujiayao tunnel's long-term settlement (nearly 90%) occurred within the first 60days after tunneling. Settlement occurred at a relatively rapid consolidation rate and then gradually stabilized within 120days with a maximum consolidation settlement magnitude of 14.99mm according to FEM versus 12.89mm from field observations. Compared to a case without reinforcement, consolidation settlement in the reinforced case was found to decrease significantly over a shorter consolidation period. Furthermore, the relatively large consolidation settlement surrounding the tunnel, as well as consolidation settlement overall, gradually and uniformly declined in an outward direction from the tunnel. The vertical jet grouting technique exhibited a strong reinforcement effect on the loess tunnel's foundation and can be applied to similar soft foundation tunnel reinforcement projects to greatly improve the stability and safety of tunnels in operation.
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语言: English
文献类型: Article
作者关键词: Loess tunnel; Vertical jet grouting pile; Finite-element model; Field observations; Long-term settlement
KeyWords Plus: SHALLOW TUNNELS; CONSOLIDATION; MODEL; DEFORMATION; BEHAVIOR; REGION; CHINA
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标题: An Algorithm for Traffic Flow Prediction Based on Improved SARIMA and GA
作者: Luo, XL (Luo, Xianglong); Niu, LY (Niu, Liyao); Zhang, SR (Zhang, Shengrui)
来源出版物: KSCE JOURNAL OF CIVIL ENGINEERING 卷: 22 期: 10 页: 4107-4115 DOI: 10.1007/s12205-018-0429-4 出版年: OCT 2018
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摘要: The traffic flow prediction plays a key role in modern Intelligent Transportation Systems (ITS). Although great achievements have been made in traffic flow prediction, it is still a challenge to improve the prediction accuracy and reduce the operation time simultaneously. In this paper, we proposed a hybrid prediction methodology combined with improved seasonal autoregressive integrated moving average (ISARIMA) model and multi-input autoregressive (AR) model by genetic algorithm (GA) optimization. Since traffic flow data has strong spatio-temporal correlation with neighboring stations, GA is used to select those stations which are highly correlated with the prediction station. The ISARIMA model is used to predict the traffic flow in test station at first. A multiinput AR model with traffic flow data in optimal selected stations is built to predict the traffic flow in test station as well. The final prediction result can be gained by combining with the results of ISARIMA and multi-input AR model. The test results from traffic data provided by TDRL at UMD Data Center demonstrate that proposed algorithm has almost the same prediction accuracy with artificial neural networks (ANNS). However, its operation time is almost the same with SARIMA model. It is proved to be an effective method to perform traffic flow prediction.
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语言: English
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作者关键词: traffic flow prediction; SARIMA; spatio-temporal correlation; GA
KeyWords Plus: KALMAN FILTER; NETWORK; VOLUME; MODELS
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标题: Response characteristics and preventions for seismic subsidence of loess in Northwest China
作者: Qiu, JL (Qiu, Junling); Wang, XL (Wang, Xiuling); Lai, JX (Lai, Jinxing); Zhang, Q (Zhang, Qian); Wang, JB (Wang, Junbao)
来源出版物: NATURAL HAZARDS 卷: 92 期: 3 页: 1909-1935 DOI: 10.1007/s11069-018-3272-5 出版年: JUL 2018
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摘要: Seismic subsidence of loess had been verified by microstructure characteristic, dynamic triaxial test and in situ simulation test using blasting vibration. It has gradually become a significant subject in the field of geotechnical earthquake engineering. Loess is widely distributed in China, which typically has a loose honeycomb-type meta-stable structure that is susceptible to a large reduction in total volume or subsidence upon ground motion. Seismic subsidence contributes to various problems to infrastructures that are constructed on loess. This paper provides a review of state-of-the-art work on mechanism, microstructure characteristic and physical mechanics mechanism of the seismic subsidence. Furthermore, the comprehensive explanation, basics and earlier research performed on subsidence amount estimation, seismic subsidence assessment and corresponding preventions of disasters have been presented briefly. The literature review shows that some significant problems, for example, appropriate theoretical basis, multi-variable coupling in assessment, physical processes, mechanical mechanism in estimation, and so on require constant research and development work to overcome the aforementioned factors. Specifically, research on quantitative relation between macro-mechanics and microstructure cannot proceed only from experimental parameters but should establish theoretical connection between them. Further study on seismic subsidence must be developed under the theory of unsaturated soil mechanics. In addition, research on chronological and spatial development law of large-scale seismic subsidence, prediction of subsidence value and anti-seismic analysis of underground structures can be conducted in future.
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作者关键词: Loess; Seismic subsidence; Mechanism; Microstructure; Probability assessment of loess seismic subsidence; Estimation of subsidence amount; Disasters and preventions
KeyWords Plus: GEOTECHNICAL PROPERTIES; MERCURY INTRUSION; MICROSTRUCTURE; TUNNEL; COLLAPSE; DEFORMATION; LANDSLIDES; DEPOSITS; SOILS; MODEL
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作者: Wang, ZF (Wang, Zhi-Feng); Cheng, WC (Cheng, Wen-Chieh); Wang, YQ (Wang, Ya-Qiong)
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摘要: Xi'an is the political, cultural and economic center in Northwestern China, and the demands for urbanization are growing dramatically in the past decades. During the rapid urbanization in Xi'an, ground fissure and land subsidence have been regarded as the two striking geohazards. At present, a total of fourteen ground fissures have been detected in Xi'an, among which eight ground fissures have a high level of activity, while the other six ground fissures are of lowly active. Several land subsidence funnels appear in different regions of Xi'an, and the annual land subsidence shows a decreasing tendency after 1991, which is estimated to be around 40 mm/year in recent years. The reasons triggering geohazards can be divided as: (1) natural factors and (2) anthropogenic factors. Analysis of the countermeasures against the prevention and mitigation of geohazards indicates that public awareness is an important issue to a success of the geoenvironment protection. In addition, the existing monitoring technologies (GPS, InSAR, and GIS) together with the technical improvement in other fields are deemed to be necessary for an effective monitoring and mitigation of the geohazards.
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文献类型: Review
作者关键词: Geohazards; Urbanization; Ground fissure; Land subsidence

KeyWords Plus: LAND SUBSIDENCE; GROUND FISSURES; PARTIAL PENETRATION; PUMPING TESTS; ACID-RAIN; SIMULATION; SHANGHAI; STRENGTH; BEHAVIOR; FAILURE
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摘要: Due to the important roles playing in the vehicles' adaptive cruise control system, variable vehicular gap polices were employed to full velocity difference model (FVDM) to investigate the traffic flow properties. In this paper, two new car following models were put forward by taking constant time headway(CTH) policy and variable time headway(VTH) policy into optimal velocity function, separately. By steady state analysis of the new models, an equivalent optimal velocity function was defined. To determine the linear stable conditions of the new models, we introduce equivalent expressions of safe vehicular gap, and then apply small amplitude perturbation analysis and long terms of wave expansion techniques to obtain the new models' linear stable conditions. Additionally, the first order approximate solutions of the new models were drawn at the stable region, by transforming the models into typical Burger's partial differential equations with reductive perturbation method. The FVDM based numerical simulations indicate that the variable vehicular gap polices with proper parameters directly contribute to the

improvement of the traffic flows' stability and the avoidance of the unstable traffic phenomena. (C) 2018 Elsevier B.V. All rights reserved.
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作者关键词: Car following model; Adaptive cruise control; Variable vehicular gap; Linear stability analysis; Reductive perturbation method
KeyWords Plus: TRAFFIC OSCILLATION PROPAGATION; FULL VELOCITY DIFFERENCE; ADAPTIVE CRUISE CONTROL; NONLINEAR-ANALYSIS; DENSITY WAVES; FLOW MODEL; VEHICLES
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标题: CoO and g-C3N4 complement each other for highly efficient overall water splitting under visible light
作者: Guo, F (Guo, Feng); Shi, WL (Shi, Weilong); Zhu, C (Zhu, Cheng); Li, H (Li, Hao); Kang, ZH (Kang, Zhenhui)
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摘要: Photocatalytic hydrogen production from overall water splitting is a clean and renewable technology that can convert solar energy into chemical energy, for which developing an efficient and stable photocatalyst has been the central scientific topic. Herein, CoO/g-C3N4 heterojunction photocatalysts were fabricated through a facile solvothermal method for overall water splitting. Simultaneous evolution of H-2 and O-2 from pure water with the stoichiometric ratio of about 2:1 achieved with all the CoO/g-C3N4 heterojunctions as catalysts under visible light irradiation. Among of them, 30 wt.% CoO/g-C3N(4) with H-2 evolution rate of 2.51 mu mol/h and O-2 evolution rate of 1.39 mu mol/h also exhibited remarkably higher photocatalytic performance and stability (over 15 cycles) than single CoO or g-C3N4. This enhanced photocatalytic activity of CoO/g-C3N4 heterojunction can be ascribed to the synergistic effect of junction and interface formed between CoO and g-C3N4. In addition, the sufficient long lifetime stability of CoO/g-C3N4 comes from the complementary advantages effect between CoO and g-C3N4, as is proved, COO can protect g-C3N4 from H2O2 poisoning, and simultaneously the photo-induced heat from CoO during the photocatalytic process responsible for the rapid deactivation can be timely conducted to g-C3N4.
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作者关键词: CoO nanoparticles; g-C3N4; Photothermal deactivation; H2O2-resisitence poisoning; Overall water splitting
KeyWords Plus: PHOTOCATALYTIC HYDROGEN-PRODUCTION; GRAPHITIC CARBON NITRIDE; Z-SCHEME; THERMAL-CONDUCTIVITY; ELECTRON MEDIATOR; GRAPHENE OXIDE; H-2 EVOLUTION; PERFORMANCE; HETEROJUNCTIONS; FABRICATION
地址: [Guo, Feng; Shi, Weilong; Zhu, Cheng; Li, Hao; Kang, Zhenhui] Soochow Univ, Inst Funct Nano & Soft Mat FUNSOM, Jiangsu Key Lab Carbon Based Funct Mat & Devices, 199 Renai Rd, Suzhou 215123, Jiangsu, Peoples R China.
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作者: Li, PY (Li, Peiyue); Wu, JH (Wu, Jianhua); Tian, R (Tian, Rui); He, S (He, Song); He, XD (He, Xiaodong); Xue, CY (Xue, Chenyang); Zhang, K (Zhang, Kang)
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摘要: This study assessed the geochemistry and quality of groundwater in the Hongdunzi coal mining area in northwest China and investigated the mechanisms governing its hydrogeochemistry and the hydraulic connectivity between adjacent aquifers. Thirty-four groundwater samples were collected for physicochemical analyses and bivariate analyses were used to investigate groundwater quality evolution. The groundwater in the mine was determined to be neutral to slightly alkaline, with high levels of salinity and hardness; most samples were of SO4 center dot Cl-Na type. Fluoride and nitrate pollution in the confined aquifers were identified, primarily sourced from coals. Natural geochemical processes, such as mineral dissolution, cation exchange, and groundwater evaporation, largely control groundwater chemistry. Anthropogenic inputs from agricultural and mining activities were also identified in both shallow unconfined aquifers and the deeper confined aquifers, respectively. It was determined that the middle confined aquifer has a high hydraulic connectivity with the lower coal-bearing aquifer due to developed fractures. Careful management of the overlying aquifers is required to avoid mine water inrush geohazards and groundwater quality deterioration. The groundwater in the mining area is generally of poor quality, and is unsuitable for direct human consumption or irrigation. Na+, SO42-, Cl-, F-, TH, TDS, NO3-, and CODMn are the major factors responsible for the poor quality of the phreatic water, while Na+, SO42-, F-, and TDS are the major constituents affecting the confined groundwater quality. This study is beneficial for understanding the impacts of coal mine development on groundwater quality, and safeguarding sustainable mining in arid areas.
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语言: English
文献类型: Article
作者关键词: Mine water; Groundwater quality index; Correlation analysis; Hydrogeochemistry; Saturation index
KeyWords Plus: SHALLOW GROUNDWATER; SURFACE-WATER; PENGYANG COUNTY; MINING AREAS; HUMAN HEALTH; RIVER-BASIN; HYDROGEOCHEMISTRY; CONTAMINATION; IRRIGATION; EVOLUTION
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标题: Landslide susceptibility modelling using GIS-based machine learning techniques for Chongren County, Jiangxi Province, China
作者: Chen, W (Chen, Wei); Peng, JB (Peng, Jianbing); Hong, HY (Hong, Haoyuan); Shahabi, H (Shahabi,

Himan); Pradhan, B (Pradhan, Biswajeet); Liu, JZ (Liu, Junzhi); Zhu, AX (Zhu, A-Xing); Pei, XJ (Pei, Xiangjun); Duan, Z (Duan, Zhao)
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摘要: The preparation of a landslide susceptibility map is considered to be the first step for landslide hazard mitigation and risk assessment. However, these maps are accepted as end products that can be used for land use planning. The main goal of this study is to assess and compare four advanced machine learning techniques, namely the Bayes' net (BN), radical basis function (RBF) classifier, logisticmodel tree (LMT), and randomforest (RF) models, for landslide susceptibility modelling in Chongren County, China. A total of 222 landslide locations were identified in the study area using historical reports, interpretation of aerial photographs, and extensive field surveys. The landslide inventory data was randomly split into two groups with a ratio of 70/30 for training and validation purposes. Fifteen landslide conditioning factors were prepared for landslide susceptibility modelling. The spatial correlation between landslides and conditioning factors was analyzed using the information gain (IG) method. The BN, RBF classifier, LMT, and RF models were constructed using the training dataset. Finally, the receiver operating characteristic (ROC) and statistical measures, including sensitivity, specificity, and accuracy, were employed to validate and compare the predictive capabilities of the models. Out of the tested models, the RF model had the highest sensitivity, specificity, and accuracy values of 0.787, 0.716, and 0.752, respectively, for the training dataset. Overall, the RF model produced an optimized balance for the training and validation datasets in terms of AUC values and statistical measures. The results of this study also demonstrate the benefit of selecting optimal machine learning techniques with proper conditioning selection methods for landslide susceptibility modelling.
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KeyWords Plus: INFERENCE SYSTEM ANFIS; DATA MINING TECHNIQUES; LOGISTIC-REGRESSION; RANDOM FOREST; SPATIAL PREDICTION; NETWORK APPROACH; FREQUENCY RATIO; BIVARIATE; FUZZY; TREE
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标题: Study on highly enhanced photocatalytic tetracycline degradation of type II AgI/CuBi2O4 and Z-scheme AgBr/CuBi2O4 heterojunction photocatalysts
作者: Guo, F (Guo, Feng); Shi, WL (Shi, Weilong); Wang, HB (Wang, HuiBo); Han, MM (Han, Mumei); Guan, WS (Guan, Weisheng); Huang, H (Huang, Hui); Liu, Y (Liu, Yang); Kang, ZH (Kang, Zhenhui)
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摘要: Removal of antibiotics from aqueous solutions by photocatalysis is an advanced technology for environmental remediation. Herein, we have fabricated a series of AgX (X = I, Br)/CuBi2O4 composites through an in-situ precipitation method. The photocatalytic activity of the obtained photocatalysts was measured by the degradation of tetracycline (TC) under visible light irradiation (lambda > 420 nm). All the AgX (X = I, Br)/CuBi2O4 composites exhibit much higher photocatalytic activity than that of pure CuBi2O4. The enhanced photocatalytic activity is mainly attributed to the efficient interfacial charge separation and migration in the AgX (X = I, Br)/CuBi2O4 heterojunctions. Meanwhile, AgX (X = I, Br)/CuBi2O4 heterojunctions display excellent photocatalytic stability, and the photocatalytic degradation rates were not obvious decreased even after five successive cycles. Based on the energy band structure, the radicals trapping and electronic spin resonance (ESR) experiments, the Z-scheme mechanism of AgBr/CuBi2O4 and type II mechanism of AgI/CuBi2O4 heterojunction photocatalysts were tentatively discussed, respectively.
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作者关键词: Photocatalysis; CuBi2O4; Tetracycline; Type II heterojunction; Z-scheme heterojunction
KeyWords Plus: VISIBLE-LIGHT IRRADIATION; P-N HETEROJUNCTION; COMPOSITE PHOTOCATALYST; HYDROGEN EVOLUTION; FABRICATION; EFFICIENT; CUBI2O4; PERFORMANCE; WATER; AG
地址: [Guo, Feng; Shi, Weilong; Wang, HuiBo; Han, Mumei; Huang, Hui; Liu, Yang; Kang, Zhenhui] Soochow Univ, Inst Funct Nano & Soft Mat FUNSOM, Jiangsu Key Lab Carbon Based Funct Mat & Devices, 199 Renai Rd, Suzhou 215123, Jiangsu, Peoples R China.
[Guo, Feng; Guan, Weisheng] Changan Univ, Sch Environm Sci & Engn, Minist Educ, Key Lab Subsurface Hydrol & Ecol Effects Arid Reg, Xian 710064, Shaanxi, Peoples R China.
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标 题 : GIS-based landslide susceptibility evaluation using a novel hybrid integration approach of bivariate statistical based random forest method
作者: Chen, W (Chen, Wei); Xie, XS (Xie, Xiaoshen); Peng, JB (Peng, Jianbing); Shahabi, H (Shahabi, Himan); Hong, HY (Hong, Haoyuan); Bui, DT (Dieu Tien Bui); Duan, Z (Duan, Zhao); Li, SJ (Li, Shaojun); Zhu, AX (Zhu, A-Xing)
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摘 要 : Taibai County is a mountainous area in China, where rainfall-induced landslides occur frequently. The purpose of this study is to assess landslide susceptibility using the integrated Random Forest (RF) with bivariate Statistical Index (SI), the Certainty Factor (CF), and Index of Entropy (IDE). For this purpose, a total of 212 landslides for the study area were identified and collected. Of these landslides, 70% (148) were selected randomly for building the models and the other landslides (64) were used for validating the models. Accordingly, 12 landslide conditioning factors were considered that involve altitude, slope angle, plan curvature, profile curvature, slope aspect, distance to roads, distance to faults, distance to rivers, rainfall, NDVI, land use, and lithology. Then, the spatial correlation between conditioning factors and landslides was analysed using the RF method to quantify the predictive ability of these factors. In the next step, three landslide models, the RF-SI, RF-CF and RF-IOE, were constructed using the training dataset. Finally, the receiver operating characteristic (ROC) and statistical measures such as the kappa index, positive predictive rates, negative predictive rates, sensitivity, specificity, and accuracy were employed to validate and compare the predictive capability of the three models. Of the models, the RF-CF model has the highest positive predictive rate, specificity, accuracy, kappa index and AUC values of 0.838, 0.824, 0.865, 0.730 and 0.925 for the training data, and the highest positive predictive rate, negative predictive rate, sensitivity, specificity, accuracy, kappa index and AUC values of 0.896, 0.934, 0.938, 0.891, 0.914, 0.828, and 0.946 for the validation data, respectively. In general, the RF-CF model produced an optimized balance in terms of AUC values and statistical measures.
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摘要: Previous researches have indicated the non-coaxiality of sand in unidirectional simple shear tests, in which the direction of the principal axes of stresses does not coincide with the corresponding principal axes of strain rate tensors. Due to the limitation of apparatus that most of testing facilities can only add shear stress in one direction, the influence of stress history on the noncoaxiality of sand is not fully considered in previous tests. In this study, the effect of stress history on the non-coaxiality of sand is systematically studied by using the first commercially available Variable Direction Dynamic Cyclic Simple Shear system (VDDCSS). Samples of Leighton Buzzard sand (Fraction B) are first consolidated under a vertical confining stress and consolidation shear stress, and then sheared by a drained monotonic shear stress. Angle (theta) between the consolidation shear stress and the drained monotonic shear stress is varied from 0 degrees to 180 degrees, with an interval of 30 degrees. The change of principal axes of stresses is predicted by well-established equations, and the principal axe of strain rate is calculated using recorded data. Results show that the level of non-coaxiality is increased by the increasing theta, especially at the initial stage of drained shearing.
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作者: Zhang, YT (Zhang, Yuting); Wu, JH (Wu, Jianhua); Xu, B (Xu, Bin)
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摘要: Nitrogen pollution of groundwater is becoming more and more serious due to intense and extensive industrial and agricultural activities. This may exert great influence on human health. In this paper, human health risk due to groundwater nitrogen pollution in Jinghui canal irrigation area in Shaanxi Province of China where agricultural activities are intense was assessed. Forty-seven groundwater samples were collected from shallow wells and analyzed for physicochemical indices in the study area. Water samples were analyzed for pH, total dissolved solids (TDS), total hardness (TH), major ions (Na+, K+, Ca2+, Mg2+, HCO3-, CO32-, Cl- and SO42-), nitrate (NO3-N), nitrite (NO2-N) and ammonia nitrogen (NH4-N). General groundwater chemistry was described by statistical analysis and the Piper diagram. Water quality was quantified via comprehensive water quality index (CWQI), and human health risk was assessed considering the age and exposure pathways of the consumers. The results show that the shallow groundwater is slightly alkaline and groundwater types are HCO3.SO4.Cl-Mg and HCO3.SO4.Cl-Na. Rock weathering and evaporation are main natural processes regulating the groundwater chemistry. The CWQI indicates that groundwater in the study area is seriously polluted by TH, TDS, SO42-, Cl- and NO3-. Human health risk is high because of high concentrations of nitrate in drinking water. The results also show that children are at higher risk than adults. The health risk through dermal contact is much lower than that through drinking water intake and can be ignored.
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作者: Zhuang, JQ (Zhuang, Jianqi); Peng, JB (Peng, Jianbing); Wang, GH (Wang, Gonghui); Javed, I (Javed, Iqbal); Wang, Y (Wang, Ying); Li, W (Li, Wei)
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摘要: Every year about one third of the geohazards in China occur in the Loess Plateau causing human loss, damaging gas and oil pipelines, destroying highways, railways and degrading farmland. Field investigation and monitoring, in-situ tests and laboratory experiments were performed to improve our understanding of the factors effecting the distribution, characteristics and causes of loess landslides. First, we find that 79% of the landslides are shallower than 10m, 85% have a volume of less than 100,000 m(3). Second, landslides on the Loess Plateau occur primarily on concave slope profiles that have slope angles of 20-35 degrees and that face south-east. Third, the equivalent coefficient of friction of loess landslides is very low resulting in long run-out with a low angle sliding surface. Loess landslides generally transform into mud-flows resulting in an increase in volume in transit and forming a geohazard chain. Antecedent rainfall plays an important role in triggering loess landslides. Finally, clusters of landslides in the Loess Plateau occur because the loess easily disintegrates under high pressure due to its loose and highly porous structure. There is a sharp decrease in cohesive strength with increase in deformation and water content and thus landslides tend to undergo static liquefaction during sliding. (C) 2017 Elsevier B.V. All rights reserved.
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作者: Xu, J (Xu, Jing); Zhang, WX (Zhang, Wenxue); Chen, Y (Chen, Yi); Fan, HB (Fan, Hongbo); Su, DW (Su, Dawei); Wang, GX (Wang, Guoxiu)
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摘要: The lithium-sulfur (Li-S) battery has been regarded as a highly promising rechargeable energy-storage system due to its high energy density of 2567 W h kg-1. However, moderating the dissolution of lithium polysulfides (LiPSs) and enhancing the conductivity of the sulfur cathode are the main limitations for its successful application. Herein, we demonstrate an approach to simultaneously tackle these two barriers by designing a porous N-Co3O4@N-C nanododecahedral composite. This composite was derived from ZIF-67 via a facile pyrolysis method, which realizes the effective doping of nitrogen into both Co3O4 and the carbon framework, simultaneously achieving a well-defined porous structure. After wrapping with reduced graphene oxide (rGO), this porous N-Co3O4@N-C/rGO cathode supported a high sulfur loading (5.89 mg cm(-2)) and exhibited excellent stability (611 mA h g(-1) at 2C after 1000 cycles). Furthermore, ex situ Raman spectroscopy, ex situ X-ray photoelectron spectroscopy, UV-vis absorption spectroscopy and first-principles calculations confirm that the N-Co3O4@N-C/rGO nanododecahedra effectively bind LiPSs in the electrode over multiple cycles. This proved that the cobalt oxides in the porous N-Co3O4@N-C nanododecahedra have strong affinity for binding LiPSs. The simultaneous doping of nitrogen both into the cobalt oxides and carbon framework not only strengthened the binding energy for LiPSs absorption, but also improved the overall conductivity of the nanododecahedra. Moreover, the interconnected porous structure contributes to the electron transfer and alleviates the volume changes of active materials during cycling.
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摘要: To explore and evaluate the impacts of relative velocity difference (RVD) with memory on the dynamic characteristics and fuel economy of traffic flow in the intelligent transportation environment, we first analyze the linkage between RVD with different-step memory and the following car's behaviors with the measured car-following (CF) data in cities by using the gray correlation analysis method and then present a RVD model based on the previous CF models in the literatures and calibrate it. Finally, we conduct several numerical simulations in the adaptive cruise control (ACC) strategy to explore how RVD with memory affects car's velocity fluctuation and fuel consumptions, and find that the RVD model can describe the phase transition of traffic flow and estimate the evolution of traffic congestion, and that considering RVD with memory in modeling CF behaviors and designing the advanced ACC strategy can improve the stability and fuel economy of traffic flow.
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作者关键词: Car-following model; Relative velocity difference with memory; Traffic flow stability; Fuel economy; The ACC system
KeyWords Plus: CRUISE-CONTROL-SYSTEMS; STABILITY ANALYSIS; TRAFFIC FLOW; ENERGY-CONSUMPTION; FUEL CONSUMPTION; DRIVER MEMORY; FULL VELOCITY; VEHICLES; TIME; DYNAMICS
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作者: Lai, JX (Lai, Jinxing); Wang, XL (Wang, Xiuling); Qiu, JL (Qiu, Junling); Zhang, GZ (Zhang, Guozhu); Chen, JX (Chen, Jianxun); Xie, YL (Xie, Yongli); Luo, YB (Luo, Yanbin)
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摘要: To cope with tunnel frost damage, studies on prevention methods are routinely conducted to improve environmental protection and energy saving. Based on field investigations, the main available thermal insulation methods and their application are discussed and analysed in this paper. The results show that passive measures, such as a thermal insulation layer or door, cannot completely avoid frost damage. Construction investment of the electric heat tracing (EHT) system is lower at the early stage, but a large investment in operation and pollution problems are needed in the later period. As renewable, clean and environmentally friendly primary energy, geothermal energy can realize energy-saving and emission-reduction. Furthermore, our research team proposed the optimization design method for tunnel heat insulation and anti-freezing by using geothermal energy and presented the challenges for future applications of the ground-source heat pump (GSHP) system in tunnels. The results regarding energy conservation from this review can provide useful technical support in design, operation and management of tunnels in cold regions.
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作者: Fan, X (Fan, Xiang); Chen, R (Chen, Rui); Lin, H (Lin, Hang); Lai, HP (Lai, Hongpeng); Zhang, CY (Zhang, Chunyang); Zhao, QH (Zhao, Qihua)
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摘 要 : Flaw is a key factor influencing failure behavior of a fractured specimen. In the present study, rectangular-flawed specimens were prepared using sandstone to investigate the effect of flaw on failure behavior of rock. Open flaw and cylindrical hole were simultaneously precut within rock specimens using high-pressure water jet cutting technology. Five series of specimens including intact, single-hole-alone, two-hole-alone, single-hole and two-flaw, and two-hole and single-flaw blocks were prepared. Uniaxial compressive tests using a rigid servo control instrument were carried out to investigate the fracture processes of these flawed specimens. It is observed that during loading, internal stress always intensively distributed at both sidewalls of open hole, especially at midpoint of sidewalls, so rock crumb flaking was firstly observed among all sandstone specimens containing single hole or two holes. Cracking around open hole is associated with the flaw inclination angle which was observed in Series III and V. Crack easily initiated at the tips of flaw with inclination angles of 0 degrees, 30 degrees, and 60 degrees but hard for 90 degrees in Series III and V. Rock burst was the major failure mode among most tested specimens, which generally induced new cracks and finally created crater shape. Additionally, due to extrusion between blocks, new shear or tensile cracks were generated and the rock specimen surface spalled. Eventually, four typical failure processes including rock crumb flaking, crack initiation and propagation, rock burst, and second rupture, were summarized.
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