

# 地震工程学报 2021年第43卷总目次

## 第1期

河西走廊西端酒西盆地古地震研究进展	刘兴旺,袁道阳,何文贵,邵延秀,张波(1)
山谷地形对入射 SV 波地震反应分析	卓发成(11)
岷县—漳县 $M_{S}6.6$ 地震前后甘肃前兆异常及响应特征	张昱,冯建刚,范兵,曹玲玲,郑卫平,陈瑶,李春燕,姜佳佳(19)
基于 CNN 的地震前兆台网观测数据异常图像识别方法	王军,刘春国,樊俊屹(28)
西太平洋台风对上海地区钻孔应变的低频扰动特征分析	袁媛,韩娜娜(33)
利用断层活动协调比方法分析云南现今地壳应变积累	徐东卓,塔拉,罗三明,朱文武,王世进,尹海权(43)
基于四层钻孔模型的体应变潮汐因子差异性原因分析	田韬,冯志生,王维,叶碧文(50)
夏垫断裂东北段地震勘探资料研究	曹朋军,夏方华,李世斌,王茜,夏训银,袁航,刘文强(56)
新疆泥火山发育区场地震灾害机理探讨	许世阳,柴少峰,尹光华,王平,蒲小武(63)
地貌参数揭示的三危山构造活动性差异及其原因探讨	高泽民,刘兴旺,邵延秀,邹小波(70)
渭河盆地及邻区现今地壳形变及构造特征研究	张永奇,韩美涛,曹建平,郑增记,宋普伟(79)
震前卫星红外亮温异常时空演化特征分析	闫丽莉,高文晶,王建国,张孟怡(90)
青海地区地震磁扰动异常特征研究	李霞,冯丽丽,赵玉红,刘磊,苟智栋(99)
平面 S 波在饱和多孔热弹性介质边界的反射问题研究	柳鸿博,周凤奎,郝磊超(105)
基于气枪震源信号和背景噪声的 2016 年呼图壁 6.2 级地震前后波速变化特征初步研究	徐亚飞,王琼,苏金波,魏芸芸(113)
基于地震参数的人员死亡评估模型对比研究	亓凤娇,苏鹤军,陈文凯,王紫荆,苏浩然(123)
三维椭球形盆地对球面波的散射	冯亭,刘中宪,黄磊,刘明珍(131)
考虑边坡地形效应的地震动力响应分析	张迎宾,柳静,唐云波,相晨琳(142)
地质条件对隧道地震响应的影响因素研究	周晓靖,钟明文,汪洪武,戴永浩,梁栋才(154)
黄泛区粉砂土动强度与抗液化强度试验研究	董正方,王仁辉,曹献伟,张群生(162)
重载列车荷载作用下雅丹边坡的动力响应分析	李福秀,吴志坚,严武建,郑海忠(169)
开挖过程及围护结构对地铁车站抗震性能的影响	张然,张鸿儒(177)
地震作用下高路堑黄土边坡细观力学研究	杨博,田文通,孙军杰,刘琨,徐舜华(187)
地震力作用下单排与双排桩支挡结构性状试验对比分析	康景文,刘昌清,邓夷明,王君红,胡建宗(195)
不规则高层结构基于新型电磁惯性质量阻尼器的半主动控制	李志军,张猛,雷海涛,王社良(205)
摩擦摆支座在矮塔斜拉桥中减震效果研究	彭文礼,季日臣(213)
列车振动及其引起场地效应研究进展	郑海忠,严武建,王平,李福秀(219)
某海底沉管隧道风塔及下部结构抗震性能分析	臧麒,赵杰,尹训强,王桂萱(229)
新型黏弹性阻尼器足尺性能试验研究	胡梅,张耀庭,孙江波,潘鹏(238)
耦合地震动下地铁车站的动力响应研究	张涵,张西文(245)

## 第2期

利用 GPS 观测研究山西断陷带现今构造应力场变化与地震活动	刘瑞春,张锦,郭文峰,陈慧,陈永前(251)
甘肃塌陷地震震相识别研究	尹欣欣,蔡润,陈文凯,彭立顺,李少华(259)
辽宁地区波速比分布特征及构造意义	曹凤娟,郭晓燕,李梦莹,贾丽华,王松阳(264)
临夏地震台观测到的临震预滑和震颤震相	许健生,李丽,姜振海(272)
华北地区高光谱气体影响因素分析	丁志华,盛艳蕊,张子广(279)
唐山及邻区双差层析成像研究	郭蕾,张素欣,王宁,周依(287)
甘肃张掖 $M_{S}5.0$ 地震前山丹地电异常探讨	杨兴悦,王燕,张俏丽,高振生,李亮(296)
2020 年龙泉山断裂带 $M_{S}5.1$ 地震成因综合分析	柳存喜,黎莎,刘冠男(306)
2018 年新疆伽师 $M_{S}5.5$ 地震的震构初探	金花,冉慧敏,赵石柱,闫新义(316)
基于压缩感知的信号重建方法及在气枪震源信号处理中的应用	张帅,杨润海,高爾根(322)
垂直和平行于断层方向的脉冲参数特性分析	李华聪,钟菊芳(331)
一种基于自适应方法的地震烈度圈自动勾画关键技术研究	刘辉,郭红梅,黄丁发,赵真,张莹(345)
含微生物气泡高饱和砂土循环三轴剪切 CFD-DEM 模拟	蒋明镜,沈振义,刘俊,杨涛,谭亚飞鸥(353)
不同应力分量耦合模式下天津滨海饱和黏性土变形特性研究	赵瑞斌,徐志涛,刘中宪,毕铭,李瑞源(361)
近断层地震作用下 RC 框排架结构易损性研究	张淑云,周杰,黄磊,王刚,马尤苏夫(369)
基于 SVM 与 SRM 耦合的抗剪强度参数随机场模拟	苗雨,丁琪皓,陈浙,郑俊杰,李继能(375)
黏滑断层隧道刚柔并济抗减错技术研究	崔光耀,魏杭杭,王明年(380)
地震-列车移动荷载耦合作用下高铁路基振动特性研究	高盟,彭晓东,李大勇,石传志,陈昊(386)
相对密实度对含砾粒砂土动剪切模量与阻尼比影响的试验研究	孟凡超,赵云辉,郑志华(396)
层状地基分界面对空沟隔振效果的影响分析	孟玉山,尚康君,刘鹏泉,刘晶磊,刘杰(404)
液化场地区间隧道地震响应分析	张艳美,吴文涛,李国勋,毕舰心(412)
楼板及其配筋在 RC 框架结构实现抗震延性机制中的作用分析	王贵珍,周玲珑,谭潜,罗文文,祝飞水(421)
静力作用下夯土遗址根部掏蚀失稳机制实验研究	张博,谌文武,裴强强,赵建忠,石玉成,王旭东,郭青林(430)
地铁车站与隧道连接处地震响应分析	张文彬,周海祚,郑刚,杨鹏博(438)
考虑动态临界加速度的地震边坡永久位移预测模型研究	刘爱娟,崔玉龙,刘铁新(445)
铁尾砂抗剪强度参数随固结度变化规律研究	张敬博,车高凤,张文强(453)
振动挤密加固深厚吹填珊瑚礁砂地基试验研究	邱伟健,杨和平,刘岩,贺迎喜(459)

- 地下空洞的面波场效应数值模拟研究 ..... 黄果, 刘争平, 刘茂洋 (468)  
 高速铁路路堤中 WIB 减隔振效果研究 ..... 陈洪运, 孙树礼, 宋绪国, 郭帅杰 (476)  
 基于振动台试验的黄土塬边斜坡变形失稳模式研究 ..... 李福秀, 吴志坚, 张丹, 赵多银, 梁超 (482)  
 移动车辆荷载环境微振动的排桩隔振参数分析 ..... 章伟康, 史吏, 徐彦, 许涌 (491)

### 第3期

- 濮阳小震集中区地震重定位及发震构造分析 ..... 邱勇, 曹云涛, 刘巧霞, 段永红, 徐志萍, 贾宇鹏, 张丹 (501)  
 三种常用叠加方法提取气枪信号的效果分析 ..... 游秀珍, 李军, 邵平荣, 赵文波, 李水龙 (512)  
 应用综合震源机制解法对辽宁及邻区现今构造应力场的初步分析 ..... 戴盈磊, 万永革, 梁永朵, 王承伟, 惠杨 (523)  
 2014年三峡秭归 M4.5、M4.7 震群序列定位及震源区三维 P 波速度结构研究 ..... 赵凌云, 莘海亮, 董彦君, 何凯, 丁文秀, 中学林, 魏贵春 (534)  
 兰州市红古区非天然地震记录特征分析 ..... 陈晓龙, 陈继锋, 蒲举, 王祖东 (545)  
 2013年岷县—漳县 6.6 级地震前地磁日变化异常及机理分析 ..... 李军辉, 姜楚峰, 冯志生, 何康, 郑海刚 (551)  
 重庆武隆 M5.0 地震前地磁异常特征分析 ..... 翁聘, 戴苗, 王弘宇, 王秋良 (559)  
 中、强震前川滇块体遥感红外辐射异常分析——以宁蒗 M5.7 地震和鲁甸 M6.5 地震为例 ..... 路茜, 张铁宝, 崔静, 杨星 (565)  
 2017 年九寨沟 7.0 级地震前应力状态及 b 值异常特征研究 ..... 姜佳佳, 冯建刚 (575)  
 2000—2018 年全国形变台站周边环境时空变化特征及对垂直摆观测影响分析 ..... 刘珠妹, 张景发, 李盛乐 (583)  
 青藏高原东北隅弧形构造区现代中小地震密集区与历史强震的关系探讨 ..... 文亚猛, 袁道阳, 张波, 冯建刚 (594)  
 黄河流域刘家峡—兰州段滑坡灾害的 InSAR 识别及成因分析 ..... 吴东霖, 葛伟鹏, 魏聪敏, 张波 (607)  
 白龙江流域隐伏活断层的电性特征研究及分类 ..... 谢兴隆, 马雪梅, 陈军, 高幼龙, 王高峰, 程正璞 (615)  
 基于 GIS 的历史文化街区避难空间适灾规划研究——以天津市历史文化街区为例 ..... 耿雅洁, 林耕, 王滢 (623)  
 基于损伤分析的旧曲线梁桥抗震性能评估 ..... 亓兴军, 张荣凤, 常敬宇, 王珊珊, 丁晓岩 (636)  
 桩承式高速铁路路基的地震反应特性研究 ..... 宋永山, 高盟, 彭晓东, 徐晓 (644)  
 基于交通振动环境下建筑结构损伤机理及减振隔振的研究现状 ..... 丑亚玲, 刘文高, 乔雄, 倪伟琳 (654)  
 采用软钢阻尼器连接的 L 形装配式剪力墙抗震性能试验研究 ..... 王宇亮, 崔洪军, 张玉敏, 庞豹, 李祥, 何斌, 曹业启 (663)  
 环境温度对板式橡胶支座摩擦滑移性能的影响分析 ..... 李悦, 纪梦为, 李冲 (672)  
 考虑桩-土相互作用的某海底隧道岸边段结构抗震性能分析研究 ..... 尹训强, 蒋园豪, 赵杰, 王桂萱 (679)  
 复杂软土盾构隧道纵向抗震分析 ..... 郭正阳, 刘瑜, 梁建文, 李东桥, 王智恺, 吴泽群 (687)  
 混凝土单桩对瑞利波的阻隔机理试验研究 ..... 赵大威, 刘航, 刘晶磊, 张楠 (693)  
 运行状态下海上单桩风机系统自振频率分析 ..... 王丕光, 刘晶波, 赵密 (704)  
 钢筋混凝土平面框架结构拟动力有限元分析 ..... 罗靓, 程博汉, 吕辉 (710)  
 基于复阻尼模型水平剪切型结构的时域解析算法 ..... 焦浩鑫, 丁肇伟, 陈龙珠 (720)  
 桩基对进水塔塔基动力稳定性影响研究 ..... 胡雨菡, 包腾飞, 朱征, 龚健 (728)  
 砂-锯末混合模型土的动力特性试验研究 ..... 李雪菊, 潘旦光 (737)  
 特征周期相关性分析 ..... 张嘉琦, 刘文锋 (743)

### 第4期

- 云南漾濞 6.4 级地震灾情快速评估 ..... 曹彦波, 李永强, 李兆隆, 曹刻 (751)  
 云南漾濞 6.4 级地震强地面运动三要素基本特征分析 ..... 田文通, 董建华, 杨博, 赵律华 (760)  
 2021 年云南漾濞 M<sub>S</sub>6.4 地震前后主动源观测走时数据的变化 ..... 杨建文, 叶泵, 高琼, 张华英, 陈佳 (767)  
 InSAR 数据约束的 2021 年 5 月 21 日云南漾濞 M<sub>S</sub>6.4 地震发震构造研究 ..... 于书媛, 骆佳骥, 杨源源, 李成龙 (777)  
 基于 Sentinel-1A 数据反演漾濞 M<sub>S</sub>6.4 地震的同震形变场及断层几何参数 ..... 朱俊文, 姚贊胜, 张波 (784)  
 2021 年 5 月 21 日云南漾濞 M<sub>S</sub>6.4 及相关地震强震动记录特征分析 ..... 潘章容, 李同林, 崔建文, 田秀丰, 石文兵, 张卫东, 袁洁 (791)  
 漾濞 M<sub>S</sub>6.4 地震中土木结构房屋抗震加固效果研究 ..... 贺素歌, 冉华, 周青云, 于江, 罗伟东, 白仙富 (799)  
 云南漾濞县 6.4 级地震前地电场异常回溯性分析 ..... 侯泽宇, 安张辉, 范莹莹, 付阿龙, 谭大诚, 卫雷 (807)  
 漾濞县 M<sub>S</sub>6.4、玛多县 M<sub>S</sub>7.4 地震前地电场变化分析 ..... 辛建村, 张晨蕾 (818)  
 2021 年青海玛多 7.4 级地震前地震活动异常特征分析 ..... 张博, 李敏娟 (826)  
 2021 年青海玛多 M<sub>S</sub>7.4 地震精定位和发震构造初探 ..... 尹欣欣, 王维欢, 蔡润, 邓津, 马丽 (834)  
 玛曲 M<sub>S</sub>4.4 地震震源机制解及其构造意义探讨 ..... 陈晓龙, 蒲举, 尹欣欣, 陈继锋 (840)  
 青海玛多 M<sub>S</sub>7.4 地震前 LURR 与 OLR 短临异常关联性研究 ..... 王淑艳, 田辉, 马克祥, 于晨, 马未宇, 余怀忠 (847)  
 青海玛多 M<sub>T</sub>7.4 地震前洞体应变异常分析 ..... 李英, 王维欢, 高永国 (853)  
 2021 年 5 月 22 日青海玛多 M<sub>T</sub>7.4 地震前共和水温异常分析研究 ..... 刘磊, 张朋涛, 苏维刚, 李霞, 赵玉红, 冯丽丽 (860)  
 青海玛多 M<sub>S</sub>7.4 地震震害特点分析 ..... 殷翔, 李鑫, 马震, 姚生海, 盖海龙, 徐伟阳 (868)  
 青海玛多 M<sub>S</sub>7.4 级地震烈度快速评估 ..... 张灿, 陈文凯, 司宏俊, 赵怀群 (876)  
 2021 年青海玛多 7.4 级地震强震动记录及特征分析 ..... 王维欢, 王文才, 尹欣欣, 陈继锋, 陈晓龙 (883)  
 玛多 7.4 级地震前震微波动现象研究 ..... 张增换, 王建军, 毛冬瑶, 李敏娟 (890)  
 青海玛多 7.4 级地震重灾区房屋震灾调查及分析 ..... 李鑫, 殷翔, 姚生海, 谢虹, 盖海龙, 杨理臣, 绛蓓蕾 (896)  
 地震作用下核电站环行吊车动力响应特性的模拟分析 ..... 李守巨, 王荣成, 杜洪泽, 王雨晴 (903)  
 穿越活断层铰链式衬砌隧道减震措施动力响应研究 ..... 姬云平 (909)  
 往复荷载作用下锈蚀钢筋混凝土柱黏结滑移模型及数值模拟研究 ..... 王斌, 吕斌, 丁一爽, 孙勇峰, 王家滨 (920)  
 制样拌和方法对木质素纤维改良黄土强度的影响 ..... 高中南, 王谦, 赵乘程, 郑龙, 马紫娟, 钟秀梅 (930)  
 强震作用下黄土隧道洞口段地震动放大效应研究 ..... 孙文, 梁庆国, 刘青霞, 孙纬宇 (935)  
 超高层建筑周围风场特性实测研究 ..... 郁雯, 何浩博, 熊春宝 (944)  
 在役公路梁式桥综合震害等级预测研究 ..... 樊燕燕, 李江龙, 李子奇 (951)  
 考虑上部结构影响的山区桥梁支座刚度设计方法研究 ..... 刘云帅, 韩建平, 王晓琴 (958)  
 地震长期效应对黄土力学性质的影响 ..... 刘伟, 谭文武, 杨芳 (965)  
 场地黄土扰动前后的湿陷性与其物性指标的关系 ..... 史宝东, 梁庆国, 赵涛, 王文卓 (977)

- 基于 GIS 技术的震后泥石流灾害损失耦合预测方法 ..... 耿佳弟, 陈五一, 赵艳华 (983)  
 地铁列车荷载作用下 Duxseal-WIB 隔振性能数值分析 ..... 李丹阳, 高 盟, 杨 帅, 陈青生 (989)

## 第 5 期

- 西秦岭北缘断裂带土壤气定点监测与初步结果分析 ..... 高曙德, 赵 洁, 王爱国, 张向红, 曹玲玲, 张 显, 武善艺, 苏小忠, 杨 超 (1001)  
 河北及周边地区岩石圈磁场变化及震前异常特征 ..... 赵慧琴, 张海洋, 李 博, 王朝景, 刘德强, 毛丰龙 (1008)  
 地下流体台网(天津)基础资料综合管理系统研制与应用 ..... 王建国, 刘春国, 张 彬, 高小其, 刘耀炜 (1014)  
 新疆地区区域应力场特征及强震间库仑应力变化探讨 ..... 刘方斌, 古丽孜娜提·依德热斯, 曲均浩 (1024)  
 九寨沟 M<sub>S</sub>7.0 地震前地磁异常 ..... 宋成科 (1037)  
 甘加盆地西缘断裂带发现新活动证据 ..... 陆诗铭, 王爱国, 文亚猛, 张 波 (1045)  
 汶川地震频次场异常特征分析 ..... 马禾青, 杨明芝, 罗国富 (1054)  
 雁列断层应力场影响因素数值模拟分析 ..... 王 时, 张环曦, 周安聘, 董 博, 章 阳, 纪春玲 (1062)  
 载荷变化对涉县台垂直摆干扰研究 ..... 张英杰, 马 栋, 赵长红, 江永建, 李晓鹏, 李玉国, 王 彬 (1072)  
 河北无极井同震响应特征分析 ..... 董 博, 纪春玲, 周安聘, 张环曦, 赵雨晨, 李 凤, 章 阳, 王 时 (1077)  
 奉节钻孔应变前兆异常机理分析——区域应力场应力传递的结果 ..... 龚丽文, 陈丽娟, 郭卫英, 陈 涛, 唐小勇 (1087)  
 综合地球物理方法在山前隐伏断裂探测中的应用——以巍山—长山南坡断裂为例 ..... 赵建明, 李 明, 费书民, 张志相, 高嘉琳 (1095)  
 利用宁波水文地质监测井网建设地下流体前兆台阵的试验研究 ..... 李慧峰, 钟羽云, 李志海, 袁宝珠, 李 蒙 (1103)  
 山地小城市避震疏散通道通行能力评估及选择研究——以昆明东川城区为例 ..... 马程伟, 王培茗, 张 瑟 (1112)  
 仙游井水位在 2017 年 7 月打井干扰前后频带响应的特性变化 ..... 樊俊屹, 刘春国, 陶志刚 (1123)  
 季冻区砂性土堤防水分场温度场及水分迁移试验研究 ..... 黄荣富, 张宝磊, 史翰超 (1129)  
 考虑卸荷变形模量的坑底回弹变形计算方法 ..... 陈 晓, 董建华, 董和平, 汤小林, 田文通 (1134)  
 季节冻土区土钉支护边坡地震反应动力特性分析 ..... 陈 兵, 吴晓磊, 董建华, 何鹏飞 (1142)  
 大型振动台试验花岗岩相似材料配比研究 ..... 吕 艳, 刁钰恒, 周泽华, 柴少峰, 王剑昆, 王祚鹏, 苏生瑞 (1150)  
 基于 SOILQUAKE 软件方法的厚层淤泥场地设防地震动参数确定探讨 ..... 夏 峰 (1160)  
 基于 IDA 的套箍加固拱上立柱抗震性能评估 ..... 唐 堂, 钱永久, 王 磊 (1168)  
 金属橡胶支座剪切性能试验研究 ..... 杜 寄, 夏修身 (1176)  
 基于实测记录分析场地因素对海底地震动特性影响 ..... 陈宝魁, 王博为, 田 钦, 胡思聪 (1183)  
 试样厚度对室内测定黄土湿陷性指标的影响 ..... 王丽琴, 刘 鑫, 王 正, 李 仓, 狄圣杰, 李凯宇 (1190)  
 FRC 框架结构的损伤程度控制及性能评估 ..... 陆婷婷, 梁兴文 (1197)  
 不同加载方式下黄土累积变形特征研究 ..... 车高凤, 钟秀梅, 马金莲, 柴少峰, 王 平 (1208)  
 基于 WAMP 的地震科普信息数据库发布系统设计与实现 ..... 李志恒, 金 兴, 李 红, 刘承雨, 张慧峰, 于江薇 (1214)  
 强震作用下坡顶建筑荷载对边坡稳定性影响研究 ..... 李旭东, 王 平, 王丽丽, 王会娟, 常文斌, 钱紫玲 (1220)  
 非饱和黄土动力液化研究——以党家岔滑坡为例 ..... 张子东, 张晓超, 任 鹏, 崔雪婷 (1228)  
 压实度对脱硫石膏动强度和动孔压影响试验 ..... 谭 彩, 万 里, 袁明道, 卢 博, 杨文滨 (1238)  
 基于耐震时程法的进水塔结构抗震性能分析 ..... 赵 杰, 杨 杰, 李晓娜 (1244)

## 第 6 期

- 晋冀豫交界地区地壳三维速度结构与地震分布特征 ..... 刘巧霞, 徐志萍, 邱 勇, 段永红, 姜 磊, 莘海亮, 赵延娜, 贾宇鹏, 张 丹 (1251)  
 基于数据挖掘的甘肃武都殿沟泉氡异常与地震活动统计关系研究 ..... 刘春国, 余 丹, 陶志刚, 樊俊屹 (1263)  
 甘东南地球物理场异常与夏河 M<sub>S</sub>5.7 地震关系分析 ..... 苏鹤军, 曹玲玲, 范 兵, 李晨桦, 周慧玲, 马东正 (1269)  
 2020 年 7 月 12 日唐山 5.1 级地震分析 ..... 王 想, 周 依, 陈 婷, 王 时, 李小军 (1280)  
 1679 年三河—平谷 8 级地震地表破裂端部特征及其地质意义 ..... 殷 娜, 李莹甄, 纪同娟, 余中元, 万 飞, 王艳萍, 贾建鹏 (1288)  
 多层介质中利用 sPn 与 Pn 到时差确定震源深度的研究 ..... 王 瑶, 万永革 (1294)  
 基于 Android 平台的地震灾情采集系统的设计与实现 ..... 余思汗, 雷启云, 刘 超, 杨 顺, 王 静 (1303)  
 浙江省珊溪水库地区土壤 Rn 和 H<sub>2</sub> 地球化学特征 ..... 阙宝祥, 沈 钰, 戴陈兵, 曾利萍, 张震峰, 张 帆, 于俊谊 (1310)  
 基于专利角度的防震减灾领域技术研发态势分析 ..... 季婉婧, 宋姗姗, 苏小芸 (1317)  
 临汾盆地北张地裂隙发育特征与成因分析 ..... 翟栋梁, 刘 川, 乔建伟, 赵俊彦 (1326)  
 2016 年阿克陶 M<sub>W</sub>6.6 地震的同震断层滑动分布及库伦应力变化 ..... 解 柳, 吴绍宇, 康明哲, 曾庆伟, 朱毅诚 (1334)  
 祁连山主动源观测站场站响应分析 ..... 姜秀璇, 郭 晓, 范 兵, 邹 锐 (1343)  
 城市地震压埋人员分布评估研究——以天津市市区为例 ..... 谷国梁, 安立强, 朱 宏, 赵士达, 贺景刚 (1352)  
 边坡稳定性分析及滑移面快速确定 ..... 叶帅华, 章瑞环, 袁中夏 (1361)  
 隔震与非隔震支座对混凝土箱梁桥地震易损性的影响 ..... 方圣恩, 唐永久 (1368)  
 地铁列车曲线运行引起学校建筑物振动响应分析 ..... 夏志强, 凌可胜, 董克胜, 徐小扣, 沈 威, 方火浪 (1377)  
 基于双曲线模型的冻土中锚杆荷载传递特性研究 ..... 董旭光, 雷 肃, 万愉快, 孙国栋 (1387)  
 层状地基环形沟隔振效果影响因素分析 ..... 刘晶磊, 刘鹏泉, 尚康君, 王 洋 (1394)  
 人工主余震作用下桥墩结构损伤预测评估分析 ..... 李喜梅, 李明睿, 母渤海 (1402)  
 地震诱发低角度黄土-泥岩滑坡动力响应及变形分析 ..... 王会娟, 王 平, 李旭东, 钱紫玲, 柴少峰, 郭海涛 (1409)  
 高速铁路运行引发场地振动的空沟隔振分析 ..... 肖慧娟, 董 尘 (1419)  
 螺旋箍筋约束套筒浆锚搭接的装配式剪力墙抗震性能有限元分析 ..... 王倩倩, 王丽霖, 孙海玲 (1429)  
 基于 SDOF 体系和高层结构的地震动强度指标研究 ..... 侯红梅, 刘文锋, 张怀超 (1436)  
 仿古建筑的隔震加固研究 ..... 张文龙, 任文杰, 付素娟, 郝雨杭, 刘果彤 (1444)  
 地震波斜入射输入体系下坝后式厂房易损性分析 ..... 王洋洋, 景月岭, 黄友保, 刘丙瑞, 周召虎, 何李浩 (1452)  
 基于地震记录的混凝土拱坝模态识别结果评价研究 ..... 武 璇, 程 珊, 杨 杰, 郑东健 (1460)  
 二维梯形沉积盆地放大效应的数值模拟研究 ..... 包得志, 荣棉水, 喻 烟 (1472)  
 隧道与联络通道连接处地震响应分析 ..... 郭知一, 周海祚, 郑 刚, 杨鹏博, 张文彬 (1480)  
 基于概率密度演化的基础隔震结构随机响应分析 ..... 叶东繁, 刘彦辉, 秦 熙, 谭 平, 周福霖 (1487)  
 基于牛顿迭代法求解群速度的地震波射线追踪模拟 ..... 张定文, 李卫东, 段金龙, 张学海 (1495)

## CHINA EARTHQUAKE ENGINEERING JOURNAL

## Vol.43 2021 CONTENTS

## No.1

Research progress on paleoearthquake in Jiuxi basin located in the western Hexi Corridor .....	LIU Xingwang, YUAN Daoyang, HE Wengui, SHAO Yanxiu, ZHANG Bo (1)
Effect of valley topography on the surface ground motion subjected to incident SV waves .....	ZHUO Facheng (11)
Precursor anomalies and response characteristics in Gansu Province before and after the Minxian–Zhangxian $M_{S}6.6$ earthquake .....	... ZHANG Yu, FENG Jian'gang, FAN Bing, CAO Lingling, ZHENG Weiping, CHEN Yao, LI Chunyan, JIANG Jiajia (19)
Abnormal image recognition from observation data of earthquake precursor networks based on CNN .....	WANG Jun, LIU Chunguo, FAN Junyi (28)
Low-frequency disturbance characteristics of the western Pacific typhoons on the borehole strain in Shanghai area .....	YUAN Yuan, HAN Nana (33)
Analysis of current crustal strain accumulation in Yunnan with the fault motion coordination ratio method .....	XU Dongzhuo, TA La, LUO Sanming, ZHU Wenwu, WANG Shijin, YIN Haiquan (43)
Reasons for the difference among volume strain tidal factors based on a four-layer drilling model .....	TIAN Tao, FENG Zhisheng, WANG Wei, YE Biwen (50)
Analysis of the northeast segment of the Xiadian fault based on seismic exploration data .....	CAO Pengjun, XIA Fanghua, LI Shibin, WANG Qian, XIA Xunyin, YUAN Hang, LIU Wenqiang (56)
Discussion on the mechanism of seismic subsidence disaster in mud volcanic area of Xinjiang .....	XU Shiyang, CHAI Shaofeng, YIN Guanghua, WANG Ping, PU Xiaowu (63)
Differential tectonic activities of Sanweishan area revealed by geomorphic parameters and its causes .....	GAO Zemin, LIU Xingwang, SHAO Yanxiu, ZOU Xiaobo (70)
Current crustal deformation and tectonic characteristics of Weihe basin and its adjacent areas .....	ZHANG Yongqi, HAN Meitao, CAO Jianping, ZHENG Zengji, SONG Puwei (79)
Spatio-temporal evolution characteristics of satellite infrared brightness temperature anomalies before earthquakes .....	YAN Lili, GAO Wenjing, WANG Jianguo, ZHANG Mengyi (90)
Characteristics of magnetic disturbance associated with earthquakes in Qinghai area .....	LI Xia, FENG Lili, ZHAO Yuhong, LIU Lei, GOU Zhidong (99)
Reflection of plane S waves at the boundary of saturated porous thermo-elastic media .....	LIU Hongbo, ZHOU Fengxi, HAO Leichao (105)
A preliminary study on the characteristics of wave-velocity variation before and after the 2016 Hutubi $M_{6.2}$ earthquake based on air-gun source signals and background noise .....	XU Yafei, WANG Qiong, SU Jinbo, WEI Yunyun (113)
Comparison of four seismic fatality assessment models based on seismic parameters .....	QI Fengjiao, SU Hejun, CHEN Wenkai, WANG Zijing, SU Haoran (123)
Scattering of spherical waves by three-dimensional sedimentary basins .....	FENG Ting, LIU Zhongxian, HUANG Lei, LIU Mingzhen (131)
Dynamic response analysis of seismic slopes considering topographic effect .....	ZHANG Yingbin, LIU Jing, TANG Yunbo, XIANG Chenlin (142)
Influence of geological conditions on the seismic response of a tunnel .....	ZHOU Xiaojing, ZHONG Mingwen, WANG Hongwu, DAI Yonghao, LIANG Dongcai (154)
Experimental study of dynamic and anti-liquefaction strengths of silty sand in Yellow River flood area .....	DONG Zhengfang, WANG Renhui, CAO Xianwei, ZHANG Qunsheng (162)
Dynamic response analysis of Yardang slopes under heavy-haul trains .....	LI Fuxiu, WU Zhijian, YAN Wujian, ZHENG Haizhong (169)
Influence of excavation and retaining structure on the seismic performance of metro stations .....	ZHANG Ran, ZHANG Hongru (177)
Micro-mechanical study on high cutting loess slopes under earthquake .....	YANG Bo, TIAN Wentong, SUN Junjie, LIU Kun, XU Shunhua (187)
Contrastive experimental analysis of characteristics of single-and double-row pile retaining structures under earthquakes .....	KANG Jingwen, LIU Changqing, DENG Yiming, WANG Junhong, HU Jianzong (195)
Semi-active control of irregularly reinforced high-rise building structure with electromagnetic inertial mass dampers .....	LI Zhijun, ZHANG Meng, LEI Haitao, WANG Sheliang (205)
Vibration reduction effect of friction pendulum bearings in low-tower cable-stayed bridges .....	PENG Wenli, JI Richen (213)
Research progress on train vibration and resulting site effects .....	ZHENG Haizhong, YAN Wujian, WANG Ping, LI Fuxiu (219)
Seismic performance analysis of the wind tower and substructure of a submarine immersed tunnel .....	ZANG Qi, ZHAO Jie, YIN Xunqiang, WANG Guixuan (229)
Full-scale experimental study on the performance of a novel viscoelastic damper .....	HU Mei, ZHANG Yaoting, SUN Jiangbo, PAN Peng (238)
Dynamic response research on subway stations under coupled ground motion .....	ZHANG Han, ZHANG Xirwen (245)

## No.2

Variation of present tectonic stress field and seismic activity in Shanxi rift zone from GPS observation .....	LIU Ruichun, ZHANG Jin, GUO Wenfeng, CHEN Hui, CHEN Yongqian (251)
Seismic phase recognition of collapse earthquakes in Gansu area .....	YIN Xinxin, CAI Run, CHEN Wenkai, PENG Lishun, LI Shaohua (259)
Distributions characteristics of wave velocity ratio and associated tectonic significance in Liaoning area .....	CAO Fengjuan, GUO Xiaoyan, LI Mengying, JIA Lihua, WANG Songyang (264)
Observation of pre-slip and tremor seismic phase at Linxia seismic station .....	XU Jiansheng, LI Li, JIANG Zhenhai (272)

Influencing factors for hyperspectral gas in North China .....	DING Zhihua, SHENG Yanrui, ZHANG Ziguang (279)
Research on velocity structure of Tangshan and adjacent areas by double-difference tomography .....	GUO Lei, ZHANG Suxin, WANG Ning, ZHOU Yi (287)
Geoelectric anomalies at Shandan station before the Zhangye Ms5.0 earthquake in Gansu Province .....	YANG Xingyue, WANG Yan, ZHANG Xiaoli, GAO Zhensheng, LI Liang (296)
Comprehensive analysis of seismogenesis of the 2020 Ms5.1 earthquake on the Longquanshan fault zone, SW China .....	LIU Cunxi, LI Sha, LIU Guannan (306)
A Preliminary study on the seismogenic structure of the 2018 Jiashi Ms5.5 earthquake in Xinjiang .....	JIN Hua, RAN Huimei, ZHAO Shizhu, YAN Xinyi (316)
Signal reconstruction method based on compressive sensing and its application in signal processing of air-gun sources .....	ZHANG Shuai, YANG Runhai, GAO Ergen (322)
Characteristics of pulse parameters perpendicular and parallel to the fault direction .....	LI Huacong, ZHONG Jufang (331)
Key techniques for automatic delineation of seismic intensity circles based on adaptive method .....	LIU Hui, GUO Hongmei, HUANG Dingfa, ZHAO Zhen, ZHANG Ying (345)
Cyclic triaxial shear tests on highly saturated sand containing microbial bubbles with CFD-DEM coupling method .....	JIANG Mingjing, SHEN Zhenyi, LIU Jun, YANG Tao, TAN Yafeiou (353)
Deformation behavior of Tianjin Binhai saturated clay under a coupling mode of different stress components .....	ZHAO Ruibin, XU Zhitao, LIU Zhongxian, BI Ming, LI Ruiyuan (361)
Seismic vulnerability analysis of RC frame-bent structures subjected to near-fault ground motions .....	ZHANG Shuyun, ZHOU Jie, HUANG Lei, WANG Gang, MAYOU Sufu (369)
Random field simulation of soil shear strength parameters based on SVM and SRM coupling .....	MIAO Yu, DING Qihao, CHEN Zhe, ZHENG Junjie, LI Jineng (375)
Rigid and flexible compound anti-dislocation reducing technology for stick-slip fault tunnels .....	CUI Guangyao, WEI Hanghang, WANG Mingnian (380)
Vibration characteristics of high-speed railway subgrade under earthquake-train moving load coupling .....	GAO Meng, PENG Xiaodong, LI Dayong, SHI Chuanzhi, CHEN Hao (386)
Experimental study of the effect of relative compactness on dynamic shear modulus and damping ratio of clayey sand .....	MENG Fanchao, ZHAO Yunhui, ZHENG Zhihua (396)
Effect of interface in layered foundation on the open trench vibration isolation .....	MENG Yushan, SHANG Kangjun, LIU Pengquan, LIU Jinglei, LIU Jie (404)
Seismic response analysis of running tunnels in liquefiable site .....	ZHANG Yanmei, WU Wentao, LI Guoxun, BI Jianxin (412)
Role of slabs and reinforcement in implementation of the seismic ductility mechanism of RC frame structures .....	WANG Guizhen, ZHOU Linglong, TAN Qian, LUO Wenwen, ZHU Feishui (421)
Experimental study on instability mechanism of rammed earthen ruins caused by basal sapping under static action .....	ZHANG Bo, CHEN Wenwu, PEI Qiangqiang, ZHAO Jianzhong, SHI Yucheng, WANG Xudong, GUO Qinlin (430)
Seismic response analysis of connection between metro station and tunnel .....	ZHANG Wenbin, ZHOU Haizuo, ZHENG Gang, YANG Pengbo (438)
A prediction model for permanent displacement of seismic slopes considering dynamic critical acceleration .....	LIU Aijuan, CUI Yulong, LIU Tiexin (445)
Variation of shear strength parameters of iron tailings with the degree of consolidation .....	ZHANG Jingbo, CHE Gaofeng, ZHANG Wenqiang (453)
Experimental study on the reinforcement of deep filled coral reef sand foundation through vibroflotation compaction method .....	QIU Weijian, YANG Heping, LIU YAN, HE Yingxi (459)
Numerical simulation of site effect of surface wave in underground cavities .....	HUANG Guo, LIU Zhengping, LIU Maoyang (468)
Vibration isolation effect of wave impeding blocks in high-speed railway embankments .....	CHEN Hongyun, SUN Shuli, SONG Xuguo, GUO Shuaijie (476)
Deformation and failure mode of loess tableland slopes based on shaking table test .....	LI Fuxiu, WU Zhijian, ZHANG Dan, ZHAO Duoyin, LIANG Chao (482)
Vibration isolation parameters of piles in micro-vibration induced by moving vehicle load .....	ZHANG Weikang, SHI Li, XU Yan, XU Yong (491)

### No.3

Relocation of earthquakes in small earthquake concentrating area of Puyang and analysis of the seismogenic structure .....	QIU Yong, CAO Yuntao, LIU Qiaoxia, DUAN Yonghong, XU Zhiping, JIA Yupeng, ZHANG Dan (501)
Effects of air-gun signal extraction using three common stacking methods .....	YOU Xiuzhen, LI Jun, SHAO Pingrong, ZHAO Wenbo, LI Shuilong (512)
Present tectonic stress field in liaoning and its adjacent areas from composite focal mechanism method .....	DAI Yinglei, WAN Yongge, LIANG Yongduo, WANG Chengwei, HUI Yang (523)
Relocation of the 2014 Zigui, Sanxia M4.5, M4.7 earthquake swarm and 3D P-wave velocity structure in the source region .....	ZHAO Lingyun, XIN Hailiang, DONG Yanjun, HE Kai, DING Wenxiu, SHEN Xuelin, WEI Guichun (534)
Characteristics of non-natural earthquake records in Honggu district, Lanzhou .....	CHEN Xiaolong, CHEN Jifeng, PU Ju, WANG Zudong (545)
Characteristics and mechanism of geomagnetic diurnal variation before the 2013 Minxian—Zhangxian Ms6.6 earthquake .....	LI Junhui, JIANG Chufeng, FENG Zhisheng, HE Kang, ZHENG Haigang (551)
Analysis of magnetic anomalies before the Wulong M5.0 earthquake in Chongqing .....	WENG Cheng, DAI Miao, WANG Hongyu, WANG Qiuliang (559)
Anomalies of thermal-infrared radiation based on remote sensing in the Sichuan—Yunnan Block before medium to strong earthquakes: a case study of Ninglang M5.7 and Ludian M6.5 earthquakes .....	LU Qian, ZHANG Tiebao, CUI Jing, YANG Xing (565)
Stress state and $b$ -value anomalies before the Jiuzhaigou Ms7.0 earthquake in 2017 .....	JIANG Jiajia, FENG Jian'gang (575)
Spatio-temporal variation characteristics of surrounding environment and associated impact on vertical pendulum observation of deformation stations in China from 2000 to 2018 .....	LIU Zhumei, ZHANG Jingfa, LI Shengle (583)

Discussion on the relationship between modern medium-small earthquake-intensive areas and historical strong earthquakes in arcuate tectonic region of the northeastern Tibetan Plateau .....	WEN Yameng, YUAN Daoyang, ZHANG Bo, FENG Jian'gang (594)
Identification and cause analysis of potential landslides in Liujiashia—Lanzhou section of the Yellow River basin with InSAR technique .....	WU Donglin, GE Weipeng, WEI Congmin, ZHANG Bo (607)
Classification of electrical characteristics of buried active faults in Bailongjiang River basin .....	XIE Xinglong, MA Xuemei, CHEN Jun, GAO Youlong, WANG Gaofeng, CHENG Zhengpu (615)
Planning of shelter space adapting to disasters for historical and cultural districts based on GIS: a case study of Tianjin .....	GENG Yajie, LIN Geng, WANG Ying (623)
Seismic performance evaluation of old curved bridges based on damage analysis .....	QI Xingjun, ZHANG Rongfeng, CHANG Jingyu, WANG Shanshan, DING Xiaoyan (636)
Seismic response characteristics of piled high-speed railway subgrade .....	SONG Yongshan, GAO Meng, PENG Xiaodong, XU Xiao (644)
Research status of damage mechanism of building structures and associated vibration reduction and isolation in traffic vibration environment .....	CHOU Yaling, LIU Wengao, QIAO Xiong, NI Weilin (654)
Experimental study on seismic behavior of L-shape fabricated shear walls connected with mild steel dampers .....	WANG Yuliang, CUI Hongjun, ZHANG Yumin, PANG Bao, LI Xiang, HE Bin, CAO Yeqi (663)
Influence of environmental temperature on the frictional sliding performance of plate rubber bearings .....	LI Yue, JI Mengwei, LI Chong (672)
Seismic behavior of bank section of a submarine tunnel considering pile-soil interaction .....	YIN Xunqiang, JIANG Yuanhao, ZHAO Jie, WANG Guixuan (679)
Longitudinal seismic analysis of shield tunnels in complex soft soils .....	GUO Zhengyang, LIU Yu, LIANG Jianwen, LI Dongqiao, WANG Zhikai, WU Zegun (687)
Experimental study on the barrier mechanism of concrete single pile to Rayleigh wave .....	ZHAO Dawei, LIU Hang, LIU Jinglei, ZHANG Nan (693)
Effect of operating state on the natural frequency of an offshore wind turbine founded on monopiles .....	WANG Piguang, LIU Jingbo, ZHAO Mi (704)
Finite element analysis for pseudo-dynamic behavior of reinforced concrete plane frame structures .....	LUO Liang, CHENG Bohan, LÜ Hui (710)
A time-domain analytical method for horizontal shear structures based on the complex damping model .....	JIAO Haoxin, DING Zhaowei, CHEN Longzhu (720)
Influence of pile foundation on dynamic stability of intake tower foundation .....	HU Yuhan, BAO Tengfei, ZHU Zheng, GONG Jian (728)
Experimental study of dynamic characteristics of modal soil mixed with sand and sawdust .....	LI Xueju, PAN Danguang (737)
Correlation analysis of characteristic periods .....	ZHANG Jiaqi, LIU Wenfeng (743)

## No.4

Rapid assessment of disasters caused by Yangbi M6.4 earthquake in Yunnan Province .....	CAO Yanbo, LI Yongqiang, LI Zhaolong, CAO Ke (751)
Basic characteristics of the three elements of strong ground motion of the Yangbi M6.4 earthquake in Yunnan Province .....	TIAN Wentong, DONG Jianhua, YANG Bo, ZHAO Lihua (760)
Travel-time variations before and after the Yangbi Ms6.4 earthquake in 2021 derived from active-source seismic data .....	YANG Jianwen, YE Beng, GAO Qiong, ZHANG Huaying, CHEN Jia (767)
Seismogenic structure of the Yangbi, Yunnan Ms6.4 earthquake on May 21, 2021 constrained by InSAR data .....	YU Shuyuan, LUO Jiaji, YANG Yuanyuan, LI Chenglong (777)
Inversion of the coseismic deformation field and fault geometric parameters of the Yangbi Ms6.4 earthquake based on Sentinel-1A data .....	ZHU Junwen, YAO Yunsheng, ZHANG Bo (784)
Characteristics of strong motion records of the Yangbi M6.4 and related earthquakes on May 21, 2021 .....	PAN Zhangrong, LI Tonglin, CUI Jianwen, TIAN Xiufeng, SHI Wenbing, ZHANG Weidong, YUAN Jie (791)
Seismic reinforcement performance of civil structure houses during Yangbi Ms6.4 earthquake .....	HE Suge, RAN Hua, ZHOU Qingyun, YU Jiang, LUO Weidong, BAI Xianfu (799)
Retrospective analysis of geoelectric field anomalies before the Yangbi Ms6.4 earthquake in Yunnan Province .....	HOU Zeyu, AN Zhanghui, FAN Yingying, FU Along, TAN Dacheng, WEI Lei (807)
Geoelectric field changes before the Yangbi Ms6.4 and Maduo Ms7.4 earthquakes .....	XIN Jiancun, ZHANG Chenlei (818)
Characteristics of seismicity anomalies before the 2021 Maduo M7.4 earthquake in Qinghai Province .....	ZHANG Bo, LI Minjuan (826)
Precise location of the 2021 Maduo, Qinghai Ms7.4 earthquake and its seismogenic structure .....	YIN Xinxin, WANG Weihuan, CAI Run, DENG Jin, MA Li (834)
Focal mechanism solution of the Maqu Ms4.4 earthquake and associated tectonic significance .....	CHEN Xiaolong, PU Ju, YIN Xinxin, CHEN Jifeng (840)
Correlation between short-term and imminent anomalies of LURR and OLR before the Maduo Ms7.4 earthquake in Qinghai Province, 2021 .....	WANG Shuyan, TIAN Hui, MA Kexiang, YU Chen, MA Weiyu, YU Huazhong (847)
Anomalies of cave strain observation before the Maduo M7.4 earthquake in Qinghai Province .....	LI Ying, WANG Weihuan, GAO Yongguo (853)
Anomalies of water temperature at Gonghe seismic station before the Maduo M7.4 earthquake on May 22, 2021 .....	LIU Lei, ZHANG Pengtao, SU Weigang, LI Xia, ZHAO Yuhong, FENG Lili (860)
Characteristics of seismic disasters caused by the Maduo Ms7.4 earthquake in Qinghai Province .....	YIN Xiang, LI Xin, MA Zhen, YAO Shenghai, GAI Hailong, XU Weiyan (868)
Intensity rapid evaluation of Maduo M7.4 earthquake in Qinghai Province, 2021 .....	ZHANG Can, CHEN Wenkai, SI Hongjun, ZHAO Huaiqun (876)
Strong motion records and characteristics of the Maduo M7.4 earthquake in Qinghai Province, 2021 .....	WANG Weihuan, WANG Wencai, YIN Xinxin, CHEN Jifeng, CHEN Xiaolong (883)

Phenomenon of microwave fluctuation before the Maduo M7.4 earthquake .....	ZHANG Zenghuan, WANG Jianjun, MAO Dongyao, LI Minjuan (890)
Investigation and analysis of earthquake disasters of houses in the stricken areas of Maduo M7.4 earthquake in Qinghai Province .....	LI Xin, YIN Xiang, YAO Shenghai, XIE Hong, GAI Hailong, YANG Lichen, ZHAN Beilei (896)
Simulation analysis of dynamic response of polar cranes in nuclear power plants under seismic action .....	LI Shouju, WANG Rongcheng, DU Hongze, WANG Yuqing (903)
Dynamic response of damping measures for hinged lining tunnels through active faults .....	JI Yunping (909)
A bond-slip constitutive model and numerical simulation for corroded reinforced concrete columns under cyclic loading .....	WANG Bin, LÜ Bin, DING Yishuang, SUN Yongfeng, WANG Jiabin (920)
Effect of mixing method of sample preparation on the strength of loess improved by lignin fiber .....	GAO Zhongnan, WANG Qian, ZHAO Chengcheng, ZHENG Long, MA Zijuan, ZHONG Xiumei (930)
Amplification effect of the portal section of loess tunnels under strong earthquake .....	SUN Wen, LIANG Qingguo, LIU Qingxia, SUN Weiyu (935)
Field measurement of wind field characteristics around super high-rise buildings .....	YU Wen, HE Haobo, XIONG Chunbao (944)
Prediction of synthetic seismic damage grade of in-service highway girder bridges .....	FAN Yanyan, LI Jianglong, LI Ziqi (951)
Investigation on design methods for the bearing stiffness of bridges in mountain areas considering influence of upper structures .....	LIU Yunshuai, HAN Jianping, WANG Xiaoqi (958)
Influence of long-term seismic effect on mechanical properties of loess .....	LIU Wei, CHEN Wenwu, YANG Fang (965)
Relationship between the collapsibility of the loess and its physical properties before and after disturbance .....	Shi Baodong, Liang Qingguo, Zhao Tao, Wang Wenzhuo (977)
A coupling prediction method of post-earthquake debris flow disaster loss based on GIS technology .....	GENG Jiadi, CHEN Wuyi, ZHAO Yanhua (983)
Numerical analysis on the vibration isolation performance of Duxseal-WIB under subway train loading .....	LI Danyang, GAO Meng, YANG Shuai, CHEN Qingsheng (989)

## No.5

Preliminary analysis results of fixed-point monitoring on soil gas along the northern margin fault of West Qinling .....	GAO Shude, ZHAO Jie, WANG Aiguo, ZHANG Xianghong, CAO Lingling, ZHANG Yu, WU Shanyi, SU Xiaozhong, YANG Chao (1001)
Variation and pre-seismic anomaly characteristics of the lithospheric magnetic field in Hebei Province and its surrounding areas .....	ZHAO Huiqin, ZHANG Haiyang, LI Bo, WANG Zhaojing, LIU Deqiang, MAO Fenglong (1008)
Development and application of an integrated management system for basic data of underground fluid network in Tianjin .....	WANG Jianguo, LIU Chunguo, ZHANG Bin, GAO Xiaoqi, LIU Yaowei (1014)
Characteristics of regional stress field and static Coulomb stress changes among strong earthquakes in Xinjiang area .....	LIU Fangbin, Gulizinati Yideresi, QU Junhao (1024)
Geomagnetic anomalies prior to the Jiuzhaigou Ms7.0 earthquake in 2017 .....	SONG Chengke (1037)
Evidence of new activities along the western margin fault zone of the Ganja Basin .....	LU Shiming, WANG Aiguo, WEN Yameng, ZHANG BO (1045)
Characteristics of frequency field anomalies before the Wenchuan earthquake in 2018 .....	MA Heqing, YANG Mingzhi, LUO Guofu (1054)
Simulation study on the influencing factors of stress field in echelon fault .....	WANG Shi, ZHANG Huanxi, ZHOU Anpin, DONG Bo, ZHANG Yang, JI Chunling (1062)
Interference of load variation on the vertical pendulum observation at Shexian seismic station .....	ZHANG Yingjie, MA Dong, ZHAO Changhong, JIANG Yongjian, LI Xiaopeng, LI Yuguo, WNAG Bin (1072)
Co-seismic response characteristics of Wuji well in Hebei Province .....	DONG Bo, JI Chunling, ZHOU Anpin, ZHANG Huanxi, ZHAO Yuchen, LI Feng, ZHANG Yang, WANG Shi (1077)
Mechanism of borehole strain precursor anomaly at Fengjie station: results from stress transfer in regional stress field .....	GONG Liwen, CHEN Lijuan, GUO Weiyi, CHEN Tao, TANG Xiaoyong (1087)
Application of integrated geophysical methods in detection of piedmont buried faults: a case study of the Weishan-Changshan south slope fault .....	ZHAO Jianming, LI Ming, FEI Shumin, ZHANG Zhixiang, GAO Jialin (1095)
Experimental study on the construction of underground fluid precursor array with Ningbo hydrogeological monitoring well network .....	LI Hufeng, ZHONG Yuyun, LI Zihai, YUAN Baozhu, LI Meng (1103)
Traffic capacity assessment and selection of earthquake evacuation routes in small mountainous cities: a case study of Dongchuan urban area .....	MA Chengwei, WANG Peiming, ZHANG Kun (1112)
Frequency band response characteristics of Xianyou well water level before and after drilling disturbance in July 2017 .....	FAN Junyi, LIU Chunguo, TAO Zhigang (1123)
Water migration test on the moisture field and temperature field of sandy soil embankments in seasonal frozen area .....	HUANG Rongfu, ZHANG Baolei, SHI Hanchao (1129)
Calculation methods for rebound deformation of foundation pit bottom considering unloading deformation modulus .....	CHEN Xiao, DONG Jianhua, DONG Heping, TANG Xiaolin, TIAN Wentong (1134)
Dynamic characteristics of seismic response of soil nailed slopes in seasonal frozen areas .....	CHEN Bing, WU Xiaolei, DONG Jianhua, HE Pengfei (1142)
Proportion of granite similar material used in large-scale shaking table tests .....	LÜ Yan, DIAO Yuheng, ZHOU Zehua, CHAI Shaofeng, WANG Jiankun, WANG Zuopeng, SU Shengrui (1150)
Determination of ground motion parameters for the thick silt site based on SOILQUAKE software method .....	XIA Feng (1160)
Seismic performance of spandrel columns strengthened by jackets based on the incremental dynamic analysis .....	TANG Tang, QIAN Yongjiu, WANG Lei (1168)
Experimental study on shear behavior of metal rubber bearings .....	DU Qian, XIA Xiushen (1176)
Effect of site factors on the characteristics of offshore ground motions based on strong motion observation records .....	CHEN Baokui, WANG Bowei, TIAN Qin, HU Sicong (1183)
Influence of specimen thickness on laboratory determination of loess collapsibility indexes .....	WANG Liqin, LIU Xin, WANG Zheng, LI Lun, DI Shengjie, LI Kaiyu (1190)

Seismic performance evaluation and damage degree control of fiber reinforced concrete frame structures .....	LU Tingting, LIANG Xingwen (1197)
Accumulative deformation characteristics of loess under different loading modes .....	CHE Gaofeng, ZHONG Xiumei, MA Jinlian, CHAI Shaofeng, WANG Ping (1208)
Design and implementation of the publishing system for WAMP-based earthquake science information database .....	LI Zhiheng, JIN Xing, LI Hong, LIU Chengyu, ZHANG Hufeng, YU Jiangwei (1214)
Influence of top building load on the slope stability under strong earthquakes .....	LI Xudong, WANG Ping, WANG Lili, WANG Huijuan, CHANG Wenbin, QIAN Ziling (1220)
Dynamic liquefaction of unsaturated loess: a case study of Dangjiacha landslide .....	ZHANG Zidong, ZHANG Xiaochao, REN Peng, CUI Xuetong (1228)
Experimental study of the influence of compaction degree on dynamic strength and dynamic pore pressure of desul-furization gypsum .....	TAN Cai, WAN Li, YUAN Mingdao, LU Bo, YANG Wenbin (1238)
Seismic performance of intake tower structures based on endurance time method .....	ZHAO Jie, YANG Jie, LI Xiaona (1244)

## No.6

Three-dimensional velocity structure and seismic distribution characteristics in the juncture of Shanxi, Hebei, and Henan Provinces .....	LIU Qiaoxia, XU Zhiping, QIU Yong, DUAN Yonghong, JIANG Lei, XIN Hailiang, ZHAO Yanna, JIA Yupeng, ZHANG Dan (1251)
Statistical relationship between the radon anomaly of Diangou spring and seismic activity in Wudu, Gansu based on data mining technology .....	LIU Chunguo, YU Dan, TAO Zhigang, FAN Junyi (1263)
Relationship between geophysical anomalies in the southeastern Gansu and the Xiale M <sub>5.7</sub> earthquake .....	SU Hejun, CAO Lingling, FAN Bing, LI Chenhua, ZHOU Huiling, MA Dongzheng (1269)
Analysis of the Tangshan M <sub>5.1</sub> earthquake on July 12, 2020 .....	WANG Xiang, ZHOU Yi, CHEN Ting, WANG Shi, LI Xiaojun (1280)
Characteristics of the surface rupture end of the 1679 Sanhe-Pinggu M <sub>8</sub> earthquake and its geological significance .....	YIN Na, LI Yingzhen, JI Tongjuan, YU Zhongyuan, WAN Fei, WANG Yanping, JIA Jianpeng (1288)
Determination of focal depth using the travel time difference of sPn and Pn waves in multilayer medium .....	WANG Yao, WAN Yongge (1294)
Design and implementation of an earthquake disaster information acquisition system based on Android platform .....	YU Sihan, LEI Qiyun, LIU Chao, YANG Shun, WANG Jing (1303)
Geochemical characteristics of soil gases Rn and H <sub>2</sub> in Shanxi reservoir area, Zhejiang Province .....	KAN Baoxiang, SHEN Yu, DAI Chenbing, ZENG Liping, ZHANG Zhenfeng, ZHANG Fan, YU Junyi (1310)
Research and development status of earthquake prevention and disaster mitigation technology from the perspective of patent .....	JI Wanjing, SONG Shanshan, SU Xiaoyun (1317)
Development characteristics and formation mechanism of Beizhang earth fissure in Linfen basin .....	ZHAI Dongliang, LIU Chuan, QIAO Jianwei, ZHAO Junyan (1326)
Co-seismic fault slip distribution and Coulomb stress change during the Aketao M <sub>6.6</sub> earthquake, 2016 .....	XIE Liu, WU Shaoyu, KANG Mingzhe, ZENG Qingwei, ZHU Yicheng (1334)
Site response of active-source observation stations in the Qilian Mountains ...	JIANG Xiuxuan, GUO Xiao, FAN Bing, ZOU Rui (1343)
Assessment of seismic buried personnel in urban area: a case study of Tianjin urban area, China .....	GU Guoliang, AN Liqiang, ZHU Hong, ZHAO Shida, HE Jinggang (1352)
Stability analysis of slope and quick determination of slip surface .....	YE Shuaihua, ZHANG Ruihuan, YUAN Zhongxia (1361)
Seismic fragility of a concrete box-girder bridge with and without isolation bearings .....	FANG Shengen, TANG Yongjiu (1368)
Vibration response analysis of school buildings caused by metro trains running on a curved track .....	XIA Zhiqiang, LING Kesheng, DONG Kesheng, XU Xiaokou, SHEN Wei, FANG Huolang (1377)
Load transfer characteristics of anchors in frozen soil based on hyperbolic model .....	DONG Xuguang, LEI Su, WAN Yukuai, SUN Guodong (1387)
Factors influencing the vibration isolation effect of annular ditches in layered foundation .....	LIU Jinglei, LIU Pengquan, SHANG Kangjun, WANG Yang (1394)
Damage prediction and evaluation of bridge pier structures under artificial mainshock-aftershock sequences .....	LI Ximei, LI Mingrui, MU Bohai (1402)
Dynamic response and deformation analysis of low-angle loess-mudstone landslides induced by earthquake .....	WANG Huijuan, WANG Ping, LI Xudong, QIAN Ziling, CHAI Shaofeng, GUO Haitao (1409)
Open trench isolation of site vibration induced by high-speed railway operation .....	XIAO Huijuan, DONG Chen (1419)
Finite element analysis of the seismic behavior of fabricated shear walls with spiral stirrup confined sleeve grout-anchor .....	WANG Qianqian, WANG Lilin, SUN Hailing (1429)
Ground motion intensity measures based on SDOF system and high-rise structures .....	HOU Hongmei, LIU Wenfeng, ZHANG Huachao (1436)
Seismic isolation and reinforcement technique of imitated ancient buildings .....	ZHANG Wenlong, REN Wenjie, FU Sujuan, HAO Yuhang, LIU Gaotong (1444)
Vulnerability analysis of a powerhouse at dam toe under the input of obliquely incident seismic waves .....	WANG Yangyang, JING Yueling, HUANG Youbao, LIU Bingrui, ZHOU Zhaoju, HE Lihao (1452)
Evaluation of modal identification results of concrete arch dams based on seismic records .....	WU Fan, CHENG Lin, YANG Jie, ZHENG Dongjian (1460)
Numerical simulation of the amplification effect of two-dimensional trapezoidal sedimentary basins .....	BAO Dezh, RONG Mianshui, YU Yan (1472)
Seismic response analysis of the joint between tunnel and cross passage .....	GUO Zhiyi, ZHOU Haizuo, ZHENG Gang, YANG Pengbo, ZHANG Wenbin (1480)
Random response analysis of base-isolated structures based on probability density evolution .....	YE Dongfan, LIU Yanhui, QIN Xi, TAN Ping, ZHOU Fulin (1487)
Simulation of seismic ray tracing based on Newton iteration method to solve group velocity .....	ZHANG Dingwen, LI Weidong, DUAN Jinlong, ZHANG Xuehai (1495)