

# 地球物理学报(月刊)

(DIQIU WULI XUEBAO)

2021年10月 第64卷 第10期



## 目 次

### 纪念王仁院士百年诞辰地球动力学研讨会 专栏

- 3427 序 ..... 石耀霖, 陈运泰
- 3429 王仁先生在地震预报中的开拓性工作 .....  
..... 石耀霖, 胡才博
- 3442 一种通过共轭地震确定地壳的内摩擦特性的  
方法 ..... 王安简, 陈运泰
- 3452 俯冲带大断层的强度问题 ..... 王克林
- 3466 汶川地震失稳机制的数值模拟研究 .....  
..... 李平恩, 廖力, 奉建州
- 3478 大尺度地幔动力学研究的现状和展望 .....  
..... 钟时杰
- 3503 金星的地幔对流、岩石圈演化和表面更新  
..... 黄金水, 相松, 杨安, 王永明
- 3514 卫星大地测量用于东亚大陆地球动力学与地  
震学研究回顾 ..... 沈正康
- 3521 负荷勒夫数渐近值解析表达式 .....  
..... 周江存, 潘尔年
- 3532 高温高压条件下纳米材料强度的测试和分析  
方法 ..... 顾超, 王善民, 赵予生

### 空间物理学·大地测量学

- 3546 行星引潮力与太阳活动关系新探 .....  
..... 王建, 王琳琳, 孙威, 王婕
- 3554 InSAR 与概率积分法联合的矿区地表沉降精  
细化监测方法 .....  
..... 陈洋, 陶秋香, 刘国林, 王路遥, 王凤云, 王珂

### 地球动力学·地震学·地电学 海洋地球物理学

- 3567 智利三联点相关的板块相对运动及其地球动

- 力学意义 ..... 贾鸿瑞, 魏东平
- 3576 鄂尔多斯活动地块西缘强震间库仑应力作用  
..... 张瑞, 张竹琪, 郑德文, 刘兴旺,  
雷启云, 邵延秀
- 3600 基于卷积神经网络的地震震级测定研究  
..... 林彬华, 金星, 康兰池, 韦永祥,  
李军, 张燕明, 陈惠芳, 周施文
- 3612 唐山  $M_s 7.8$  地震前  $b$  值异常特征 .....  
..... 陈学忠, 李艳娥, 陈丽娟
- 3619 2021 年 5 月 21 日漾濞  $M_s 6.4$  地震近场地震  
动特征和方向性效应分析 ..... 张斌, 李小军,  
林国良, 荣棉水, 俞言祥, 王玉石, 傅磊
- 3632 实时智能地震处理系统研发及其在 2021 年  
云南漾濞  $M_s 6.4$  地震中的应用 .....  
..... 廖诗荣, 张红才, 范莉萍, 李珀任,  
黄玲珠, 房立华, 秦敏
- 3646 透射边界高频失稳机理及稳定实现——P-SV  
波动 ..... 章旭斌, 廖振鹏, 谢志南
- 3657 腾冲火山多地球物理参数模型 .....  
..... 李俊秀, 叶涛, 张慧茜, 黄清华
- 3669 浅层结构不确定性对广角地震走时正演模拟  
结果的影响——以西沙地块 OBS2011-1 测线  
为例 ..... 马飞, 黄海波, 丘学林,  
张浩宇, 王强, 李子正

### 应用地球物理学

- 3685 地震反射波反演二阶优化方法及其应用 ...  
..... 程玖兵, 王腾飞, 徐文才
- 3701 散射波积分方程的 Adomian 分解解法 .....  
..... 汪燚林, 董良国
- 3718 复波场的实部和虚部对同时源波形反演的

影响 ..... 杨育臣, 方金伟, 王宁, 李松龄

..... 伍宇明, 兰恒星, 黄为清

- 3730 基于频率-结构双重加权阈值的地震数据插值  
..... 陈思远, 曹思远, 孙耀光, 江雨濛, 高君

- 3774 裂缝性岩石低频下复电阻率与饱和度关系  
研究 ..... 潘保芝, 阿茹罕, 郭宇航,  
张丽华, 魏伯阳, 周伟一

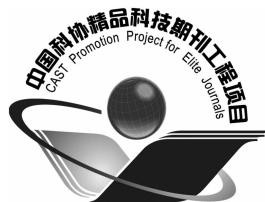
- 3742 基于地质模型的定向组合激发-接收技术 .....  
..... 李亚林, 徐峰, 彭更新,  
刘福烈, 郭念民, 徐凯驰

- 3788 基于精确 Zoepritz 方程的储层含油气性预  
测方法 ..... 周林, 廖建平, 李景叶,  
陈小宏, 刘兴业

- 3756 稳定正则化参数估计方法及其在盆地基底重  
力异常反演中的应用 ..... 刘燕东, 纪晓琳,  
孟小红, 王万银, 王俊

- 3807 基于叠前全方位角道集方位振幅梯度各向异  
性变化的 HTI 裂缝介质油气检测方法与技术  
..... 刘军迎, 雍学善, 张静, 罗瑞兰

- 3766 不饱和黄土的波速与质量含水率关系 .....  
.....



## Contents

**Special Section on Symposium on Geodynamics to Commemorate the 100th Birthday of Academician Wang Ren**

- 3429 Pioneering works of Academician Wang Ren in earthquake prediction ..... SHI YaoLin, HU CaiBo
- 3442 A method of determination of the internal friction characteristics within the Earth's crust through conjugate earthquakes ..... WANG AnJian, CHEN Yun-Tai
- 3452 On the strength of subduction megathrusts ..... KeLin WANG
- 3466 Numerical simulation study of instability mechanism of the 2008 Wenchuan earthquake ..... LI PingEn, LIAO Li, FENG JianZhou
- 3478 Mantle dynamics on large spatial and temporal scales ..... ZHONG ShiJie
- 3503 Mantle convection, lithosphere evolution and resurfacing of Venus ..... HUANG JinShui, XIANG Song, YANG An, WANG YongMing
- 3514 Satellite geodesy applied to geodynamic and seismological studies in East Asia: A review ..... SHEN ZhengKang
- 3521 Asymptotic load Love numbers in exact closed-form ..... ZHOU JiangCun, PAN ErNian
- 3532 A methodology for determining mechanical properties of nanomaterials at high pressure and temperature ..... GU Chao, WANG ShanMin, ZHAO YuSheng

**Space physics · Geodesy**

- 3546 New insights into the relationship between planetary tidal force and solar activity ..... WANG Jian, WANG LinLin, SUN Wei, WANG Jie
- 3554 Detailed mining subsidence monitoring combined with InSAR and probability integral method ..... ZHANG XuBin, LIAO ZhenPeng,

- ..... CHEN Yang, TAO QiuXiang, LIU GuoLin, WANG LuYao, WANG FengYun, WANG Ke
- Geodynamics · Seismology · Geoelectricity · Marine Geophysics**
- 3567 Relative motion of plates related to the Chile triple junction and geodynamic significance ..... JIA HongRui, WEI DongPing
- 3576 Coulomb stress transfer of strong earthquakes within tectonic belts near western Ordos block ..... ZHANG Rui, ZHANG ZhuQi, ZHENG DeWen, LIU XingWang, LEI QiYun, SHAO YanXiu
- 3600 The research of earthquake magnitude determination based on Convolutional Neural Networks ..... LIN BinHua, JIN Xing, KANG LanChi, WEI YongXiang, LI Jun, ZHANG YanMing, CHEN HuiFang, ZHOU ShiWen
- 3612 Anomalies of the *b* value prior to the  $M_S 7.8$  Tangshan Earthquake of 1976 ..... CHEN XueZhong, LI YanE, CHEN LiJuan
- 3619 Analysis of strong ground motion characteristics and directivity effect in the near-field for the May 21, 2021  $M_S 6.4$  Yangbi earthquake ..... ZHANG Bin, LI XiaoJun, LIN GuoLiang, RONG MianShui, YU YanXiang, WANG YuShi, FU Lei
- 3632 Development of a real-time intelligent seismic processing system and its application in the 2021 Yunnan Yangbi  $M_S 6.4$  earthquake ..... LIAO ShiRong, ZHANG HongCai, FAN LiPing, LI BoRen, HUANG LingZhu, FANG LiHua, QIN Min
- 3646 Mechanism of high frequency instability and stable implementation for transmitting boundary—P-SV wave motion ..... ZHANG XuBin, LIAO ZhenPeng, XIE ZhiNan

3657 A multi-geophysical parameter model in Tengchong volcanic area ..... LI JunXiu, YE Tao, ZHANG HuiQian, HUANG QingHua

3669 Influence of shallow structure uncertainty on wide-angle seismic traveltimes forward modeling——A case study using OBS2011-1 on the Xisha Block .....  
..... MA Fei, HUANG HaiBo, QIU XueLin, ZHANG HaoYu, WANG Qiang, LI ZiZheng

## Applied geophysics

3685 Second-order optimization of seismic reflection waveform inversion and its application ..... CHENG JiuBing, WANG TengFei, XU WenCai

3701 Adomian decomposition method of integral equations for scattered waves ..... WANG YiLin, DONG LiangGuo

3718 The influence of the real and imaginary parts of complex wavefield on simultaneous source waveform inversion .....  
..... YANG YuChen, FANG JinWei, WANG Ning, LI SongLing

3730 Seismic data interpolation based on the frequency-structure dual weighted threshold ... CHEN SiYuan, CAO SiYuan, SUN YaoGuang, JIANG YuMeng, GAO Jun

- 3742 A directional combined excitation-receiving technology based on geological model ..... LI YaLin, XU Feng, PENG GengXin, LIU FuLie, GUO NianMin, XU KaiChi
- 3756 A stable regularization parameter estimation method and its application to gravity anomaly inversion of basin basements ..... LIU YanDong, JI XiaoLin, MENG XiaoHong, WANG WanYin, WANG Jun
- 3766 Relationship between wave velocities and water content of unsaturated loess ... WU YuMing, LAN HengXing, HUANG WeiQing
- 3774 Study on the relationship between complex resistivity and water saturation in fractured rock at low frequency ..... PAN BaoZhi, A RuHan, GUO YuHang, ZHANG LiHua, WEI BoYang, ZHOU WeiYi
- 3788 Prediction method of reservoir oil-gas potential based on exact Zoeppritz equations ... ZHOU Lin, LIAO JianPing, LI JingYe, CHEN XiaoHong, LIU XingYe
- 3807 Oil and gas detection method and technique of HTI fracture media based on the anisotropic variation of azimuth-amplitude gradient in prestack omni-directional incidence-angular gather ..... LIU JunYing, YONG XueShan, ZHANG Jing, LUO RuiLan