法文哲

北京大学地球与空间科学学院　　电 话: 86-10-62758754
遥感与地理信息系统研究所　　手 机: 13426487139
北京市海淀区颐和园路 5 号遥感所 209 室　　Email: wzfa@pku.edu.cn

教育背景

2003.09–2009.01　复旦大学，信息科学与工程学院，电路与系统，博士
1999.09–2003.07　西安电子科技大学，应用物理系，学士

工作经历

2017.08–现在　　北京大学地球与空间科学学院，研究员，长聘副教授，博士生导师
2016.01–现在　　澳门科技大学太空科学研究所，特聘副教授，特聘教授
2011.08–2017.07　北京大学地球与空间科学学院，助理教授，博士生导师
2009.02–2011.06　法国巴黎地球物理研究所，博士后（法国宇航局 CNES 资助）

研究方向

1. 月球与行星科学：月球与水星极区的水冰，月壤厚度及其演化，月壤热特性，撞击成坑机理与应用
2. 微波遥感：电磁散射理论，数值模拟，数据验证，参数反演

课程教学

2018.02–2023.06　主讲本科生课程《雷达遥感原理与应用》，32 学时，2 学分
2013.09–2023.06　主讲研究生课程《行星遥感》，32 学时，2 学分
2012.02–2023.06　主讲研究生课程《科技论文写作与学术规范》，32 学时，2 学分
2011.12–2016.12　参与讲授研究生课程《微波遥感》，8 学时，0.5 学分
2015.11–2015.12　参与讲授研究生课程《测绘与遥感前沿讨论班》，16 学时，1 学分
2008.02–2008.07　主讲研究生课程《雷达系统导论》，48 学时，3 学分

获奖与荣誉

2022　　北京大学教学优秀奖
2021　　首次火星探测任务先进个人
2021　　中组部万人计划青年拔尖人才计划支持
2019　　Nature 杂志人类探月的五位明日之星

2018 教育部自然科学二等奖(第二完成人，共三人)

2018 北京大学黄廷方/信和青年杰出学者奖

2014 北京大学教学优秀奖

2013 JGR-Planets 优秀审稿人

2013 科学通报优秀审稿人

2012 全国优秀博士学位论文提名论文

2011 国家自然科学二等奖(第三完成人，共三人)

2011 上海市优秀博士学位论文

2009 教育部自然科学一等奖(第四完成人，共五人)

学术兼职

1. 2015.07–2019.12 *Journal of Geophysical Research: Planets* 副主编
2. 2018.04– 2018 *Earth and Space Science* 主编遴选委员会，成员
3. 2017.10– “嫦娥”四号任务科学目标可实现性独立评估专家组，专家成员
4. 2017.08– 国际月球探测分析组极区挥发分特别行动组，成员
5. 2016.11– 北京大学行星与空间科学研究中心，副主任
6. 中国探月工程“嫦娥”3 号任务科学应用研究核心团队骨干成员
7. 第一届中国地球物理学会行星物理专业委员会
8. 2017 年第三届北京月球与深空探测国际论坛，科学技术委员会委员；2012 年第二届地球观测与遥感应用会议组委会委员；2014 年第二届月球与行星科学论坛组委会委员
9. 美国地球物理学会(AGU)会员，欧洲地球物理学会(EGU)会员，电气和电子工程师协会(IEEE)会员
10. *Nature Geosciences, Icarus, Journal of Geophysical Research: Planets, Earth and Planetary Science Letters, Meteoritic & Planetary Science, IEEE Geoscience and Remote Sensing Letters, Science Bulletin, Science China Physics, Mechanics & Astronomy* 等期刊审稿人
11. 自然科学基金评审人，教育部学位中心学位论文评审专家

学术访问

2017.11–2017.12 法国蔚蓝海岸天文台，拉格朗日实验室，访问学者

2016.01–2017.12 澳门科技大学，太空研究所，客座副教授

2016.07–2016.09 英国杜伦大学，高等研究所/物理系，高级访问学者

2014.11–2014.09 澳门科技大学，太空研究所，访问学者

2010.03–2010.04 加州理工学院/喷气动力实验室，访问科学家

学生指导

1. **博士后：**郭壮(2022.09–), 郭弟均(2018.09–2021.08) , 贾博钧(2024.09–)
2. **博士:** 张紫燕(2025.09–), 童佳琪(2024.09–), 刘洋(2023.09–), 张洺玮(2022.09–),贾博钧(2019.09–), 刘晓峰(2018.08–2023.07), 孙庆海(2019.09–2023.09) ,都骏(2013.09–2020.01), 蔡玉珍(2012.09–2018.12)
3. **硕士:** 李越扬(2021.09–), 台钰山(2020.09–2023.07), 刘甜甜(2013.09–2016.07)
4. **本科生：**赵阳(2023.06–), 田茗羽(2021.10–), 张洺玮(2020.06–2022.06), 杨帆(2020.03–2021.10), 杨烯(2019.12–2022.06), 张溶倩(2018.01–2019.12), 王英杰(2014.01–2016.07), 肖元正(2012.02–2013.06), 方托(2012.05–2013.05), 余硕然(2012.01–2012.09)
5. **高中生：**薛子昂(2017.11–2019.01), 王格涵(2017.11–2019.01), 虞协青(2017.11–2019.01), 王赞旭(2017.11–2019.01),曹克凡(2017.11–2019.01), 毕书涵(2015.05–2016.05)

参加学术会议

1. **参加学术会议：**LPSC (Lunar and Planetary Science Conference) 2010-2018; EPSC (European Planetary Science Conference) 2009, 2010, 2013, 2015; New View of the Moon II workshop 2016; AGU (American Geophysical Union) fall meeting, 2010; JC2 (Journees CNES Jeunes Chercheurs) meeting, 2009; ILEWG (International Conference on Exploration and Utilization of the Moon), 2006.
2. **会议报告：**在国内外学术会议上做 15 次口头报告，16 次会议墙报。
3. **特邀报告：**法国蔚蓝海岸天文台(2017.11); 英国杜伦大学 (2016.08); 中科院紫金山天文台 (2016.05); 法国巴黎地球物理研究所(2015.09); 澳门科技大学(2014.08; 2015.07); 中科院地球化学研究所(2014.07); 中科院上海天文台 (2013.12); 山东大学威海分校 (2011.09); 西安电子科技大学 (2011.08); 中国地质大学 (2011.06); 复旦大学 (2015.08; 2011.06); 美国国家航空航天博物馆 (2011.03); 法国格勒诺布尔行星科学实验室 (2010.11; 2017.11)。

科研项目

1. 2016.06–2018.05 遥感科学国家重点实验室开放基金项目, 月球极区多源雷达数据分析与水冰探测, OFSLRSS201612, 项目负责人
2. 2016.12–2019.12 澳门科学技术发展基金项目, 多源雷达数据对月球浅表层特性研究, 043/2016/A2, 项目负责人
3. 2016.01–2019.12 国家自然科学基金面上项目, 月球极区雷达异常撞击坑分布特征与

成因分析, 11573005, 项目负责人

4. 2016.01–2017.12 国家科技部遥感中心, 2016年度遥感青年科技人才创新资助, 项目负责人
5. 2015.06–2017.05 复旦大学电磁波信息科学教育部重点实验室开放基金项目, 月表简缩极化SAR目标分解理论与应用, EMW201503, 项目负责人
6. 2015.01–2017.12 澳门科技大学月球与行星科学实验室开放基金, 基于小型撞击坑形态学的月壤厚度估算, 项目负责人
7. 2014.12–2017.11 澳门科学技术发展基金项目, 月表撞击坑成坑机制数值模拟与应用, 075/2014/A2, 项目第二负责人
8. 2014.01–2015.12 中国科学院行星科学重点实验室开放基金项目, 月球表面热环境特征研究, PSL14_03, 项目负责人
9. 2013.01–2015.12 国家自然科学基金青年基金项目, 多源探测数据对月球表面粗糙度的研究, 11203002, 项目负责人
10. 2013.01–2017.12 国家自然科学基金重点项目, 农田遥感监测机理与生态过程关键参数反演, 41230747, 主要参与人
11. 2012.07–2014.06 遥感科学国家重点实验室开放基金项目, “嫦娥”与Diviner辐射计数据对月表热特性的研究, OFSLRSS201208, 项目负责人

论文概况

1. **概述**：在 *Journal of Geophysical Research, Icarus, Geophysical Research Letters, Radio Science, IEEE Geoscience and Remote Sensing Letters, Chinese Science Bulletin* 等学术期刊发表论文 60 多篇，其中第一作者/通信作者论文 30 多篇。
2. **引用**：2457 次 (Google Scholar) 。
3. **H-index** (Hirsch index): 28 (Google Scholar) 。
4. **研究亮点**：关于月球虹湾区域月壤厚度估算的论文(*JGR-Planets*, 2014)被 *JGR-Planets* 选为亮点文章进行了介绍；有关小行星 Toutatis 表面形貌的论文(*GRL*, 2014)被 *Science* 选为编辑推荐进行了介绍；关于月壤中 He-3 含量估算的论文(*Icarus*, 2007)被 *Nature Geoscience* 作为研究亮点进行了特别报道，并被选为该期刊 2007.07–09 25 篇热门论文之一；月表雷达成像模拟论文(*Science in China F*, 2009) 被科学时报选为研究亮点进行了介绍；月表链状坑起源的论文(*Science China Physics, Mechanics &Astronomy*, 2010)被科学时报选为研究亮点进行了报道。
5. **论文列表**

(1) Xiaofeng, **Wenzhe Fa** (2023), Simultaneous estimation of dust content and layer thickness in martian polar layered deposits from SHARAD radargram using hidden Markov model, *IEEE Transactions on Geoscience and Remote Sensing*, to be submitted.

(2) Qinghai Sun, **Wenzhe Fa**, Meng-Hua Zhu, and Jun Du (2023), Evolution of physical properties of sub-kilometer scale impact craters on the lunar maria, *Research in Astronomy and Astrophysics*, RAA-2023-0194, under review.

(3) Yushan Tai, **Wenzhe Fa** (2023), Shallow subsurface structure and material composition of Martian Utopia Planitia: Constraints from SHARAD radar data, *Scientia Sinca Physica, Mechanica & Astronomica*, doi.org/10.1360/SSPMA-2023-0243.

(4) Xiaofeng, **Wenzhe Fa** (2023), Automatic extraction of 3-D information of lunar surface rocks in topography data, *IEEE Transactions on Geoscience and Remote Sensing*, TGRS-2023-00530, In revision.

(5) Mingwei Zhang, **Wenzhe Fa**, Emily M. Barnard, Vincent R. Eke (2023), Modeling the evolution of lunar regolith 2: Growth rate and spatial distribution, *Journal of Geophysical Research: Planets*, Under review, 2023JE008035.

(6) Peng Fang, **Wenzhe Fa**, Jinhai Zhang, Yangting Lin (2023), SHARAD study on the structures and permittivity of a buried impact crater in Martian Central Elysium Planitia, *Science China Earth Sciences*, 66, https://doi.org/10.1007 /s11430-022-1062-1.

(7) Qinghai Sun, **Wenzhe Fa**, Meng-Hua Zhu, Jun Du (2023), Morphological characteristics of impact craters of 5–20 km on the Moon, *Icarus*, 404, 115688, https://doi.org/ 10.1016 /j.icarus.2023.115688.

(8) Mingwei Zhang, **Wenzhe Fa**, Vincent R. Eke (2023), Modeling the evolution of lunar regolith: 1. Formation mechanism through individual simple impact craters, *Journal of Geophysical Research: Planets*, 128, e2023JE007850, https://doi.org/10.1029/ 2023JE007850.

(9) Yueyang Li, **Wenzhe Fa**, Bojun Jia (2023), Morphological characterization of decimeterto hectometer-scale impact craters on the Moon, *Journal of Geophysical Research: Planets*, 128, e2022JE007703, https://doi.org/10.1029/2022JE007703.

(10) **Wenzhe Fa** (2023), Overview of the dielectric permittivity of lunar surface materials and implications for Chang'E-5 sample measurements (in Chinese), *Scientia Sinca Physica, Mechanica & Astronomica*, 52(3), 239602, doi:10.1360/SSPMA-2022-0396.

(11) Bojun Jia, **Wenzhe Fa**, Mingwei Zhang, Kaichang Di, Mark Robinson, Minggang Xie, Yushan Tai, and Yang Li (2022), On the provenance of the Chang'E-5 lunar samples, *Earth and Planetary Science Letters*, 596, 117791, https://doi.org/10.1016 /j.epsl.2022.117791.

(12) Jun Du, **Wenzhe Fa**, Shengxia Gong, Yang Liu, Le Qiao, Yushan Tai, Feng Zhang, and Yongliao Zou (2022), Thicknesses of mare basalts in the Chang'E-5 landing region: Implications for the late-stage volcanism on the Moon, *Journal of Geophysical Research: Planets*, 127, e2022JE007314, https://doi.org/10.1029/2022JE007314.

(13) Xiaofeng Liu, and **Wenzhe Fa** (2022), A fully automatic algorithm for reflector detection in radargrams based on continuous wavelet transform and minimum panning tree, *IEEE Transactions on Geoscience and Remote Sensing*, 60, 4601620, https://doi.org/10.1109 /TGRS.2022.3170036.

(14) Yazhou Yang, Shuai Li, Yang Liu, Meng-Hua Zhu, Bo Wu, Jun Du, **Wenzhe Fa**, Rui Xu, Zhiping He, Bin Xue, Jianfeng Yang, Yongliao Zou (2022), In situ detection of impact remnants on the Moon by the Chang'E-4 rover, *Nature Astronomy*, 6(2), 207–213, https://doi.org/10.1038/s41550-021-01530-w.

(15) Dijun Guo, **Wenzhe Fa**, Bo Wu, Yuan Li and Yang Liu (2021), Millimeter- to decimeter-scale surface slope and roughness of the Moon at the Chang'e-4 exploration region, *Geophysical Research Letters*, 48, e2021GL094931, https://doi.org/10.1029/e2021 GL094931.

(16) Xi Yang, **Wenzhe Fa**, Jun Du, Minggang Xie, and Tiantian Liu (2021), Effect of topographic degradation on small lunar craters: Implications for regolith thickness estimation, *Geophysical Research Letters*, 48, e2021GL095537, https://doi.org/10.1029/e2021 GL095537.

(17) Dijun Guo, **Wenzhe Fa**, Xiaojia Zeng and Jun Du (2021), Geochemistry of the Von Karman crater floor and thickness distribution of the non-mare ejecta over the Chang'e-4 landing area, *Icarus*, 359, 114327, https://doi.org/10.1016 /j.icarus.2021.114327.

(18) Bojun Jia, **Wenzhe Fa**, Minggang Xie, Yushan Tai, and Xiaofeng Liu (2021), Regolith properties in the Chang'E-5 landing region of the Moon: Results from multisource remote sensing observations, *Journal of Geophysical Research: Planets,* 126, e2021JE006934, https://doi.org/10.1029/2021JE006934.

(19) Adrien Broquet, Mark A, Wieczorek, and **Wenzhe Fa** (2021), The composition of the south polar cap of Mars derived from orbital data, *Journal of Geophysical Research: Planets*, 126, e2020JE006730, https://doi.org/10.1029/2020JE006730.

(20) Minggang Xie, Zhiyong Xiao, Luyuan Xu, **Wenzhe Fa**, Aoao Xu (2021), The change of Earth/Moon impactor population at about 3.6 billion years ago, *Nature Astronomy*, 5(2), 128–133, https://doi.org/10.1038/s41550-020-01241-8.

(21) Oriane Gassot, Alain Herique, **Wenzhe Fa**, Jun Du, and Wlodek Kofman (2021), Ultrawideband SAR Tomography on asteroids, *Radio Science*, 56, e2020RS007186,

https://doi.org/10.1029/2020RS007186.

(22) Yuzhen Cai, and **Wenzhe Fa** (2020), Meter-scale topographic roughness of the Moon: The effect of small impact craters, *Journal of Geophysical Research: Planets*, 125, e2020JE006429, doi:10.1029/2020JE006429.

(23) Adrien Broquet, Mark A, Wieczorek, and **Wenzhe Fa** (2020), Flexure of the lithosphere beneath the north polar cap of Mars: Implications for ice composition and heat flow, *Geophysical Research Letters*, 47, e2019GL086746, doi:10.1029/2019GL086746.

(24) **Wenzhe Fa** (2020), Bulk density of the lunar regolith at the Chang'E-3 landing site as estimated from Lunar Penetrating Radar, *Earth and Space Science*, 7, e2019EA000801, doi:10.1029/2019EA000801.

(25) Jun Du, Mark A.Wieczorek, **Wenzhe Fa** (2020), Thickness of lava flow within the northern smooth plains on Mercury as estimated from partially buried craters, *Geophysical Research Letters*, 47, e2020GL090578, https://doi.org/10.1029/2020GL090578.

(26) Huazhong Ren, Jing Nie, Jiaji Dong, Rongyuan Liu, **Wenzhe Fa**, Ling Hu, Wenjie Fan (2020), Lunar surface temperature and emissivity retrieval from Diviner Lunar Radiometer Experiment sensor, *Earth and Space Science*, 8, e2020EA001436, doi:10.1029/2020EA001436.

(27) Roberto Orosei, Chunyu Ding, **Wenzhe Fa**, Antonis Giannopoulos, Alain Herique, Wlodek Kofman, Sebastian E. Lauro, Chunlai Li, Elena Pettinelli, Yan Su, Shuguo Xing and Yi Xu (2020), The global search for liquid water on Mars from orbit: Current and future perspectives, *Life*, 10(8), 120, doi:10.3390/life10080120.

(28) Ya-Qiu Jin, **Wenzhe Fa** (2019), Theoretical Method and Application for Planetary Microwave Remote Sensing. *Beijing: Science Press*.

(29) Jun Du, **Wenzhe Fa**, Mark A. Wieczorek, Minggang Xie, Yuzhen Cai, and Meng-Hua Zhu (2019), Thickness of lunar mare basalts: New results based on modeling the degradation of partially buried craters, *Journal of Geophysical Research: Planets*, 124, 2430–2459, doi:10.1029/2018JE005872.

(30) Niutao Liu, **Wenzhe Fa**, Ya-Qiu Jin (2019), Brightness temperature of lunar surface for calibration of multi-channel millimeter-wave radiometer of geosynchronous FY-4M, *IEEE Transactions on Geoscience and Remote Sensing*, 57(5), 3055–3063, doi:10.1109/TGRS.2018.2880116.

(31) **Wenzhe Fa**, and Vincent R. Eke (2018), Unravelling the mystery of lunar anomalous craters using radar and infrared observations, *Journal of Geophysical Research: Planets*, 123, 2119–2137, doi:10.1002/2018JE005668.

(32) Niutao Liu, **Wenzhe Fa**, and Ya-Qiu Jin (2018), No water ice inverted in PSR of Hermite-A crater based on Mini-RF data and two-layers model, *IEEE Geoscience and Remote Sensing Letters*, 15(10), 1485–1489, doi: 10.1109/LGRS.2018.2852139.

(33) Alain Herique, et al. (2018), Direct observations of asteroid interior and regolith structure: Science measurement requirements, *Advances in Space Research*, 62, 2141–2162, doi:10.1016 /j.asr.2017.10.020. (including Wenzhe Fa)

(34) Feng Zhang, James W. Head, Alexander T. Basilevsky, Roberto Bugiolacchi, Goro Komatsu, Lionel Wilson, **Wenzhe Fa**, and Meng-Hua Zhu (2017), Newly discovered ring-moat dome structures in the lunar maria: Possible origins and implications, *Geophysical Research Letters*, 44, 9216–9224.

(35) **Wenzhe Fa** (2017), Regolith Physical Properties, *Encyclopedia of Lunar Science*, 1–4, doi:10. 1007/978-3-319-05546-6_61-1.

(36) **Wenzhe Fa**, Yuzhen Cai, Zhiyong Xiao, and Wei Tian (2016), Topographic roughness of the northern high latitudes of Mercury from MESSENGER Laser Altimeter data, *Geophysical Research Letters*, 43, 3078–3087, doi:10.1002/2016GL068120.

(37) Yanlong Bu, Wenlin Tang, **Wenzhe Fa**, Geshi Tang, Chibiao Ding, Yang Yang, Jianfeng Cao, Hai Chen, and Hejun Yin (2016), Relative trajectory estimation during Chang'E-2 probe's flyby of asteroid Toutatis using dynamics, optical and radio constraints, *IEEE Transactions on Geoscience and Remote Sensing*, 54(8), 4680–4693, doi:10.1109/TGRS. 2016.2548713.

(38) Shuoran Yu, and **Wenzhe Fa** (2016), Thermal conductivity of surficial lunar regolith estimated from Lunar Reconnaissance Orbiter Diviner Radiometer data, *Planetary and Space Science*, 124, 48–61, doi:10.1016/j.pss.2016.02.001.

(39) **Wenzhe Fa**, Meng-Hua Zhu, Tiantian Liu, and Jeffrey B. Plescia (2015), Regolith stratigraphy at the Chang'E-3 landing site as seen by lunar penetrating radar, *Geophysical Research Letters*, 42, 10179–10187, doi:10.1002/2015GL066537.

(40) Chao Chen, Qiming Qin, Li Chen, Hong Zheng, **Wenzhe Fa**, Abduwasit Ghulam, and Chengye Zhang (2015), Photometric correction and reflectance calculation for lunar images from the Chang'E-1 CCD stereo camera, *Journal of the Optical Society of America A*, 32(12), 2409–2422, doi: 10.1364/JOSAA.32.002409.

(41) Yanlong Bu, Geshi Tang, Kaichang Di, **Wenzhe Fa**, Tianjiang Hu, Chibiao Ding, Bin Xu, Bin Liu, Jianfeng Cao, Songjie Hu, Cheng Yang, and Chuankai Liu (2015), New insight of asteroid 4179 Toutatis using China Chang'E-2 close flyby optical measurements, *The Astronomical Journal*, 149, 1–11, doi:10.1088/0004-6256/149/1/21.

(42) **Wenzhe Fa**, Tiantian Liu, Meng-Hua Zhu, and Junichi Haruyama (2014), Regolith thickness over Sinus Iridum: Results from morphology and size-frequency distribution

of small impact craters, *Journal of Geophysical Research: Planets*, 119, 1914–1935, doi:10.1002 /2013JE004604.

(43) Menghua Zhu, **Wenzhe Fa**, Wing-Huen Ip, Jiangchuan Huang, Tiantian Liu, Linzhi Meng, Jun Yan, Aoao Xu, Zesheng Tang, Xiaolei Wang, and Dong Qiao (2014), Morphology of asteroid (4179) Toutatis as imaged by Chang'E-2 spacecraft, *Geophysical Research Letters*, 41, 328–333, doi:10.1002/2013GL058914.

(44) Tuo Fang, and **Wenzhe Fa** (2014), High frequency thermal emission from the lunar surface and near surface temperature of the Moon from Chang'E-2 microwave radiometer, *Icarus*, 232, 34–53, doi:10.1016/j.icarus.2013.12.024.

(45) **Wenzhe Fa**, and Yuzhen Cai (2013), Circular polarization ratio characteristics of impact craters from Mini-RF observations and implications for ice detection at the polar regions of the Moon, *Journal of Geophysical Research: Planets*, 118, 1582–1608, doi:10. 1002/jgre.20110.

(46) **Wenzhe Fa** (2013), Simulation for ground penetration radar (GPR) study of the subsurface structure of the Moon, *Journal of Applied Geophysics*, 99, 98–108, doi: 10.1016/j.japp geo.2013.08.002.

(47) Jun Du, and **Wenzhe Fa** (2013), A rectification model for lunar surface circular polarization ratio (CPR) images based on range-dependent incidence angle, *SCIENCE CHINA Physics,Mechanics & Astronomy*, 43(11), 1411–1420, doi:10.1360/132013-319. (In Chinese with English abstract)

(48) Meng-Hua Zhu, Jin Chang, Tao Ma, Wing-Huen Ip, **Wenzhe Fa**, Jian Wu, Mingsheng Cai, Yizhong Gong, Yiming Hu, Aoao Xu, Zesheng Tang (2013), Potassium map from Chang'E-2 constraints the impact of Crisium and Orientale basin on the Moon, *Scientific Reports*, 3, 1611, doi:10.1038/srep01611.

(49) **Wenzhe Fa**, and Mark A. Wieczorek (2012), Regolith thickness of the lunar nearside: Result from Earth-based 70-cm Arecibo radar observations, *Icarus*, 218, 771–778, 10. 1016/j.icarus.2012.01.010.

(50) **Wenzhe Fa**, Mark A. Wieczorek, and Essam Heggy (2011), Modeling polarimetric radar scattering from the lunar surface: study on the effect of physical properties of the regolith layer, *Journal of Geophysical Research: Planets*, 116, E03005, doi:10.1029/ 2010JE003649.

(51) **Wenzhe Fa**, and Ya-Qiu Jin (2010), Global inventory of Helium-3 in lunar regolith estimated by multi-channel microwave radiometer on Chang-E 1, *Chinese Science Bulletin*, 2010, 55(35): 4005–4009, doi:10.1007/s11434-010-4198-9.

(52) **Wenzhe Fa**, and Ya-Qiu Jin (2010), A primary analysis of microwave brightness temperature of lunar surface from Chang-E 1 multi-channel radiometer observation

and inversion of regolith layer thickness, *Icarus*, 207(2): 605–615, doi: 10.1016/j.icarus.2009.11.034.

(53) **Wenzhe Fa**, and Ya-Qiu Jin (2010), Simulation of radar sounder echo from lunar surface and subsurface structure, *Science in China D*, 53(7):1043–1055, doi:10.1007/s11430- 010-3070-8.

(54) Ya-Qiu Jin, and **Wenzhe Fa** (2010), The modeling analysis for microwave emission from stratified media of non-uniform lunar cratered terrain surface in Chinese Chang-E 1 observation, *IEEE Geosciences and Remote Sensing Letters*, 7(3): 530–534, doi: 10.1109/ LGRS.2010.2040802.

(55) **Wenzhe Fa**, Feng Xu, and Ya-Qiu Jin (2009), SAR imaging simulation for an inhomogeneous undulated lunar surface based on triangulated irregular network, *Science in China F*, 2009, 52(4): 559–574, doi:10.1007/s11432-009-0065-1.

(56) Ya-Qiu Jin, and **Wenzhe Fa** (2009), An inversion approach for lunar regolith layer thickness using optical albedo data and microwave emission simulation, *Acta Astronautica*, 65: 1409–1423, doi:10.1016/j.actaastro.2009.03.082.

(57) Rui Ding, **Wenzhe Fa**, and Zhiliang Wang (2008), Analysis on vector radiative transfer through a finite slab of stochastic precipitation medium, *Waves in Random and Complex Media*, 18 (3): 371–385.

(58) **Wenzhe Fa**, and Ya-Qiu Jin, Simulation of brightness temperature from lunar surface and inversion of regolith-layer thickness, *Journal of Geophysical Research: Planets*, 2007, 112, E05003, doi:10.1029/2006JE002751.

(59) **Wenzhe Fa**, and Ya-Qiu Jin, Quantitative estimation of helium-3 spatial distribution in the lunar regolith layer, *Icarus*, 2007, 190(1): 15–23, doi:10.1016/j.icarus.2007.03.014.

(60) Ya-Qiu Jin, Feng Xu, and **Wenzhe Fa**, Numerical simulation of polarimetric radar pulse echoes from lunar regolith layer with scatter inhomogeneity and rough interfaces, *Radio Science*, 2007, 42, RS3007, doi:10.1029/2006RS003523.