Research Field: PLANETARY GEOLOGY

Focused Field: IMPACT CRATERING & IMPACTOR SOURCES

SHORT BIO

I'm currently an Assistant Professor in State Key Laboratory of Lunar and Planetary Sciences, Macau University of Science and Technology. I got my B.E. in Surveying and Mapping Engineering and master's degree in Planetary Geodesy from Wuhan University in 2011 and 2014, respectively, and got my Ph.D. in Planetary Geology from the University of Tokyo in 2017. My current research fields are impact processes on the Moon and Galilean satellites (especially Ganymede and Callisto. I've published over 10 papers in professional journals, including *Nature Astronomy*, *Nature Communication*, *Astronomy & Astrophysics*, *Geophysical Research Letters*, etc.

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Master: Planetary Geodesy – Wuhan University
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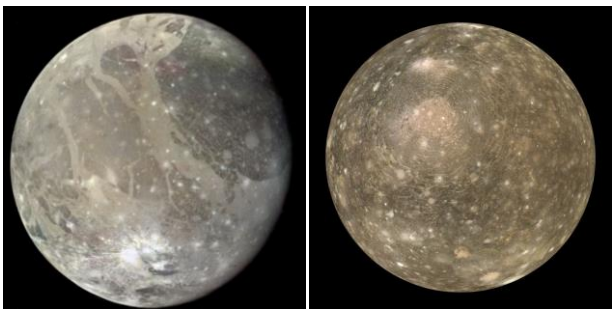

Jovian satellites: Ganymede and Callisto

PUBLICATIONS (*selected*)

- Qiao, L., **Xu, L.**, Head, J., et al. (2024). Geological Evidence for Extensive Basin Ejecta as Plains Terrains in the Moon's South Polar Region. *Nature Communications*, 15: 5783.
- Qiao, L., Hess, M., **Xu, L.**, et al. (2023). Extensive Lunar Surface Disturbance at the Chang'e-5 Mission Landing Site: Implications for Future Lunar Base Design and Construction. *Journal of Geophysical Research: Planets*, e2022JE007730.
- Cao, H., Xu, Y., **Xu, L.**, et al. (2023). From Schrödinger to Van Kármán: An Intriguing New Geological Structure Revealed by the Chang'e-4 Lunar Penetrating Radar. *Geophysical Research Letters*, e2022GL101413.
- **Xu, L.**, Qiao, L., Xie, M., et al. (2022). Formation age of lunar Lalande crater and its implications for the source region of the KREEP-rich meteorite Sayh al Uhaymir 169. *Icarus*, 115166.
- Yang, K., Feng, W., **Xu, L.**, et al. (2022). Review of research on lunar dust dynamics. *Astrophysics and Space Science*, 367(7), 1-12.
- **Xu, L.**, Qiao, L. (2022). Formation age of the Rima Sharp sinuous rill on the Moon, source of the returned Chang'e-5 samples. *Astronomy & Astrophysics*, 657.
- Qiao, L., **Xu, L.**, Yang Y., et al. (2021). Cratering Records in the Chang'e-5 Mare Unit: Filling the "Age Gap" of Lunar Crater Chronology and Preparation for its Re-calibration. *Geophysical Research Letters*, 48, e2021GL095132. (**cover paper**)
- **徐璐媛.** (2021). 木星和土星冰卫星上的撞击坑分布：探寻外太阳系撞击体来源的钥匙. *地质学报*, 95(9)
- Qiao, L., Chen, J., **Xu, L.**, et al. (2021). Geology of the Chang'e-5 landing site: Constraints on the sources of samples returned from a young nearside mare. *Icarus*, 364, 114480.
- **Xu, L.**, Zhang, X. , Qiao, L., & Lai, J. (2021). Evaluating the Thickness and Stratigraphy of Ejecta Materials at the Chang'e-4 Landing Site. *The Astronomical Journal*, 162(1), 29.
- Xie, M., Xiao, Z., **Xu, L.**, et al. (2021). Change in the Earth–Moon impactor population at about 3.5 billion years ago. *Nature Astronomy*, 5(2), 128-133.
- **Xu, L.**, Xie, M. (2020). Ejecta Thickness Distribution of Lunar Schrödinger Basin. *Journal of Geophysical Research: Planets*, 125(12).
- **Xu, L.**, Hirata, N. & Miyamoto, H. (2019). Spatial distribution of ray craters on Callisto: Implications for ray retention and impactor sources on Jovian satellites. *Journal of Geophysical Research: Planets*, 124 (7), 1717-1727
- **Xu, L.**, Hirata, N. & Miyamoto, H.(2017). Ray craters on Ganymede: Implications for cratering apex-antapex asymmetry and surface modification processes. Icarus, 295, 140-148.
- Yan, J., **Xu, L.**, Li, F., et al. (2015). Lunar core structure investigation: Implication of GRAIL gravity field model. *Advances in Space Research*, 55(6), 1721-1727.

PROFESSIONAL EXPERIENCE

- 2022.10 – current: Assistant Professor, SKLplanets, Macau University of Science and Technology
- 2017.11 – 2022.10: Post-doctoral, SKLplanets, Macau University of Science and Technology

GRANTS

- 2024-2026 木卫三和木卫四表面撞击坑坑群的识别和对比研究，国家自然科学基金青年项目，主持
- 2023-2025 月球撞擊輻射紋特徵及形成機制研究，澳门发展基金，主持
- 2023-2024 月球成分型辐射纹撞击坑定年研究，武汉大学测绘遥感信息工程国家重点实验室开放基金，主持
- 2019-2021 嫦娥四號探測數據的科學分析，澳门发展基金，子课题负责人
- 2018-2019 月球撞击坑溅射毯厚度分布特征研究,上海天文台开放基金，主持
- 2014-2017 基于新近多探测器的月球与火星重力场模型研究，国家自然科学基金面上项目，参与
- 2012-2015 基于多月球探测器低轨跟踪数据的月球局部重力场及构造研究，国家自然科学基金面上项目，参与

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