

# Dr. Megan R. K. Seritan (*Megan R. Kelley*)

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## Employment

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**Planetary Astronomer & Archivist**, SETI Institute Dec. 2023 - present  
• Associate Deputy Manager, Ring-Moon Systems Node of the Planetary Data System (PDS)  
• Manager: Dr. Matt Tiscareno

## Education

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**Ph.D. Earth & Planetary Science**, University of California Santa Cruz Sept. 2016 - Nov. 2022  
• Advisor: Prof. Ian Garrick-Bethell  
• Thesis title: *The Geologic Context of Lunar Magnetic Anomalies*

**B.S. Physics**, University of California Santa Barbara Sept. 2012 - Jun. 2016  
• Graduated with Honors  
• GPA: 3.59/4.00

## Research Experience

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**Lunar paleomagnetism**, UC Santa Cruz Mar. 2017 - Nov. 2022  
• Advisor – Ian Garrick-Bethell

**Lunar orbital dynamics**, UC Santa Cruz Apr. 2018 - May 2019  
• Advisor – Francis Nimmo

**Seismology**, UC Santa Cruz Sept. 2016 - Mar. 2018  
• Advisor – Thorne Lay

**Volcano seismology**, UC Santa Barbara Oct. 2015 - Oct. 2017  
• Advisor – Robin Matoza

**Stellar astrophysics**, UC Santa Barbara Oct. 2014 - Jul. 2016  
• Advisor – Benjamin Mazin

**Astronomy instrumentation**, California Institute of Technology Summer 2015  
• Advisors – Rana Adhikari and Kate Dooley

**Condensed matter physics**, Los Alamos National Laboratory Summer 2014, 2013  
• Advisor – Scott Crooker

**Nuclear chemistry**, Los Alamos National Laboratory Jun. 2011 - Sep. 2012  
• Advisors – Gregory Dale and Michele Decroix

## Skills

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### Languages & Tools

- Python
- MATLAB
- Adobe Illustrator
- L<sup>A</sup>T<sub>E</sub>X/Overleaf
- Microsoft Office Suite

### Analytic skills

- Image processing
- Mapping
- Signal processing
- Spectral analysis
- Finite difference methods

## Honors & Awards

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Career Development Award, Lunar and Planetary Institute	March 2018
Honorable Mention, Computational Sciences Graduate Fellowship, Department of Energy	April 2017
Regents Graduate Fellowship, UC Santa Cruz	Fall 2016
Regents Scholarship, UC Santa Barbara	Sep. 2012 - Jun. 2016
Physics Circus Award, UC Santa Barbara	May 2015, June 2016

## Teaching Assistantships

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The Dynamic Earth (Earth 110C), UC Santa Cruz	Spring 2023
• For Prof. Ian Garrick-Bethell – 75 students, two additional TA's	
Planetary Science (Earth 160), UC Santa Cruz	Fall 2021, 2020
• For Prof. Ian Garrick-Bethell – 60 students, no additional TA's	
Introductory Computer Programming for Geoscientists (Earth 119), UC Santa Cruz	Fall 2019
• For Prof. Mathis Hain – 40 students, no additional TA's	
Introduction to Scientific Computing (Earth/Astro 119), UC Santa Cruz	Spring 2018
• For Dr. Aldo Batta Marquez – 40 students, one additional TA	
COSMOS - California Hazards, UC Santa Cruz	Summer 2017
• For Prof. Susan Schwartz – 30 students, two additional TA's	
Planetary Discovery (Earth 8), UC Santa Cruz	Spring 2017
• For Prof. Xi Zhang – 100 students, no additional TA's	

## Publications

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### Journal Articles

- Seritan, M. R. K., Garrick-Bethell, I. (2023). Volcanic thermal demagnetization of the Reiner Gamma magnetic anomaly. *Icarus*, 403, 115601. DOI:10.1016/j.icarus.2023.115601
- Wakita, S., Johnson, B. C., Garrick-Bethell, I., Kelley, M. R., Maxwell, R. E., Davison, T. M. (2021). Impactor material records the ancient lunar magnetic field in antipodal anomalies. *Nature Communications*, 12, 6543. DOI:10.1038/s41467-021-26860-1
- Kelley, M. R. and Garrick-Bethell, I. (2020). Gravity constraints on the age and formation of the Moon's Reiner Gamma magnetic anomaly. *Icarus*, 338, 113465. DOI:10.1016/j.icarus.2019.113465
- Garrick-Bethell, I. and Kelley, M. R. (2019). Reiner Gamma: A magnetized elliptical disk on the Moon. *Geophysical Research Letters*, 46, 5065-5074. DOI: 10.1029/2019GL082427
- Lee, J.-K., Maxwell, R. E., Jin, H., Baek, S.-M., Ghassemi, O., Kelley, M. R., Lee, H., Kim, K.-H., Lee, S., Garrick-Bethell, I. (2019). A small lunar swirl and its implications for the formation of the Reiner Gamma magnetic anomaly. *Icarus*, 319, 869-884. DOI: 10.1016/j.icarus.2018.09.015
- Matoza, R. S., Fee, D., Green, D., Le Pichon, A., Vergoz, J., Haney, M. M., Mikesell, T. D., Franco, L., Valderrama, O. A., Kelley, M. R., McKee, K., Caranna, L. (2018). Local, regional, and remote seismo-acoustic observations of the April 2015 VEI 4 eruption of Calbuco volcano, Chile. *Journal of Geophysical Research: Solid Earth*, 123, 3814-3827. DOI: 10.1002/2017JB015182
- Crooker, S. A., Liu, F., Kelley, M. R., Martinez, N. J. D., Nie, W., Mohite, A., Nayyar, I. H., Tretiak, S., Smith, D. L., Ruden, P. P. (2014). Spectrally resolved hyperfine interactions between polaron and nuclear spins in organic light emitting diodes: Magneto-electroluminescence studies. *Applied Physics Letters*, 105, 153304. DOI: 10.1063/1.4898700
- Liu, F., Kelley, M. R., Crooker, S. A., Nie, W., Mohite, A. D., Ruden, P. P., Smith, D. L. (2014). Magneto-electroluminescence of organic heterostructures: Analytical theory and spectrally resolved measurements. *Physical Review B*, 90, 235314. DOI: 10.1103/PhysRevB.90.235314

### Conference Presentations

- **Seritan, M. R. K.** and Garrick-Bethell, I. Magnetic field morphology related to topography and surface slopes at the Gerasimovich lunar magnetic anomaly. *American Geophysical Union Fall Meeting*, Chicago, Illinois and virtual, 14 December 2022.
- Garrick-Bethell, I. and **Seritan, M. R. K.** Laccolith model for lunar ring-moat dome structures. *Lunar and Planetary Science Conference*, virtual, 19 March 2021.
- **Seritan, M. R. K.** and Garrick-Bethell, I. Modeling thermal demagnetization at the lunar swirl Reiner Gamma. *Lunar and Planetary Science Conference*, virtual, 15 March 2021.
- **Kelley, M. R.** and Garrick-Bethell, I.<sup>†</sup> Constraining the source geometry and formation age of the Moon's Reiner Gamma lunar swirl. *American Geophysical Union Fall Meeting*, Washington, D.C., 10 December 2018.
- **Kelley, M. R.**, Garrick-Bethell, I., Goossens, S. J. Constraints on the formation age and evidence of thermal demagnetization of the Moon's Reiner Gamma magnetic anomaly. *NASA Exploration Science Forum*, NASA Ames Research Center, Mountain View, CA, 27 June 2018.
- **Kelley, M. R.**, Garrick-Bethell, I., Goossens, S. J. Constraints on the formation age and evidence of thermal demagnetization of the Moon's Reiner Gamma magnetic anomaly. *Lunar and Small Bodies Graduate Conference*, NASA Ames Research Center, Mountain View, CA, 25 June 2018.
- **Kelley, M. R.**, Garrick-Bethell, I., Goossens, S. J. Evidence for thermal demagnetization of the Moon's Reiner Gamma magnetic anomaly. *Lunar and Planetary Science Conference*, The Woodlands, TX, 23 March 2018.
- Matoza, R.S., Fee, D., Vergoz, J., Green, D.N., Le Pichon, A., Haney, M.M., **Kelley, M.R.**, McKee, K.F. Global and regional volcanic infrasound from the April 2015 eruption of Calbuco, Chile. *American Geophysical Union Fall Meeting*, San Francisco, CA, 12 December 2016.
- **Kelley, M. R.**, Dooley, K., Adhikari, R., Arai, K., Vass, S. Prototyping a tilt-free seismometer. *Caltech LIGO SURF Research Symposium*, Pasadena, CA, 20 August 2015.
- Crooker, S. A., **Kelley, M. R.**, Martinez, N. J. D., Nie, W., Mohite, A. D., Smith, D. L., Tretiak, S., Ruden, P. P. Hyperfine spin interactions between polarons and nuclei in light emitting diodes: Magneto-EL measurements. *American Physical Society March Meeting*, Denver, CO, 3-7 March 2014.

<sup>†</sup>Indicates speaker when not the first author

### Conference Posters

- **Kelley, M. R.** and Garrick-Bethell, I. Testing the antipodal ejecta magnetization hypothesis: a closer look at the geologic setting of the lunar Gerasimovich magnetic anomalies. *Lunar and Planetary Science Conference*, The Woodlands, TX, 19 March 2019.
- **Kelley, M. R.** and Matoza, R. S. Investigation of Infrasound and Seismic Signals from Explosive Volcanic Eruptions. *Undergraduate Research and Creative Activities Colloquium*, Santa Barbara, CA, 17 May 2016.
- **Kelley, M. R.**, Dooley, K., Adhikari, R., Arai, K., Vass, S. Prototyping a Tilt-Free Seismometer. *Conference for Undergraduate Women in Physics*, San Diego, CA, 16 January 2016.