Steven M. Kreyche

PhD Candidate · Physics

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Statement

Steven Kreyche is a planetary scientist with skills in research, scientific communication, and technical writing. He is primarily interested in pursuing questions related to habitability in the Solar System and beyond. His research consists of work that uses numerical simulations to study how planetary rotational evolution behaves over time to better understand the conditions necessary for habitability. Steven is also involved in efforts to study Titan's hazy atmospheric limb, and also collaborates with several stellar occultation networks that seek to observe distant Solar System objects. He is seeking a postdoctoral position to further his scientific research career.

Education

University of Idaho — *Moscow, ID*

PhD Physics — *Aug 2017 - present*

- Advisor: Dr. Jason W. Barnes

University of Idaho — *Moscow, ID*

MS Physics — *Aug 2017 - May 2020*

- Advisor: Dr. Jason W. Barnes

Boise State University — *Boise, ID*

BS Physics — *Aug 2013 - May 2017*

- Astrophysics emphasis
- Applied mathematics minor
- Research advisor: Dr. Brian K. Jackson

Professional Experience

2018-Present	**Graduate Research Assistant**, Physics Dept., University of Idaho
2017-2021	**Graduate Teaching Assistant**, Physics Dept., University of Idaho
2015-2017	**Undergraduate Research Assistant**, Physics Dept., Boise State University
2015-2017	**Undergraduate Teaching Assistant**, Physics Dept., Boise State University

Publications

Published

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Chambers, J.E. 2020. Exploring tidal obliquity variations with SMERCURY-T. *The Planetary Science Journal*. 2 (5) 187.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2020. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. *The Planetary Science Journal*. 1 (1) 8.

Jackson, B., Adams, E., Sandidge, W., **Kreyche, S.**, Briggs, J. 2019. Variability in the Atmosphere of the Hot Jupiter Kepler-76b. *The Astronomical Journal*. 157 (6) 239.

In Prep

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E. Tidal obliquity variations of a moonless Earth. In preparation.

Kreyche, S.M., Heslar, M.F., Barnes, J.W., Miller, W.J., Mackenzie, S.M. Profiling Titan's hazy atmospheric limb with *Cassini* VIMS. In preparation.

Fernández-Valenzuela, E. **et al.** Physical properties of Hi'iaka from stellar occultation data. In preparation.

Presentations

Invited Talks

April 2021. *Planetary Obliquity Evolution and Chaos*. Guest Lecture, Graduate Classical Mechanics, University of Idaho.

Aug 2020. *Planetary Obliquity and its Impact on Potentially Habitable Worlds*. Talk, Boise Astronomical Society Meeting, Virtual.

First Author Presentations

Kreyche, S.M., Heslar, M.F., Barnes, J.W., Miller, W.J., Mackenzie, S.M. 2021. Profiling Titan's hazy atmospheric limb with *Cassini* VIMS. **Talk and Poster**: University of Idaho College of Science Research Expo, Moscow, ID.

Kreyche, S.M., Heslar, M.F., Barnes, J.W., Miller, W.J., Mackenzie, S.M. 2021. Profiling Titan's hazy atmospheric limb with *Cassini* VIMS. **Poster**: Titan Through Time Workshop, Boulder, CO

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Chambers, J.E. 2021. Exploring tidal obliquity variations with SMERCURY-T. **Poster**: DDA Conference, Virtual

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Chambers, J.E. 2020. Exploring tidal obliquity variations with SMERCURY-T. **Poster**: DPS Conference, Virtual

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2020. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Talk**: DDA Conference, Virtual

Kreyche, S.M. 2020. Starlink: The night sky is getting busier. **Departmental Talk**: University of Idaho Physics Department, Moscow, ID.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2019. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Poster**: EPSC-DPS, Geneva, Switzerland.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2019. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Poster**: University of Idaho College of Science Research Expo, Moscow, ID.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2018. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Departmental Talk**: University of Idaho Physics Department, Moscow, ID.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2018. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Poster**: NWxSW Regional Astronomy Conference, Vancouver, B.C., Canada

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2018. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Poster**: DPS Conference, Knoxville, TN.

Kreyche, S.M., Barnes, J.W., Quarles, B.L., Lissauer, J.J., Chambers, J.E., Hedman, M.M. 2018. Retrograde-rotating exoplanets experience obliquity excitations in an eccentricity-enabled resonance. **Poster**: University of Idaho College of Science Research Expo, Moscow, ID.

Kreyche, S.M., Jackson, B., Briggs, J. 2017. Variability in the eclipse of the hot Jupiter HAT-P-7b. **Poster**: Exoclipse Conference, Boise, ID

Teaching Experience

Fall 2020 - Spring 2021	**Laboratory Physics I Lab**, Lab Instructor	*University of Idaho*
Fall 2017	**General Astronomy**, Graduate Teaching Assistant	*University of Idaho*
Fall 2017	**General Astronomy Lab**, Lab Instructor	*University of Idaho*
Fall 2015 - Summer 2017	**Engineering Physics II Lab**, Lab Instructor	*Boise State University*
Spring 2015	**General Physics I Lab**, Lab Instructor	*Boise State University*

Outreach & Professional Development

Service and Outreach

2021-Present	**Lucky Star Project**, Volunteer Observer	*UI Observatory*
2018-Present	**Research and Education Collaborative Occultation Network**, Volunteer Observer	*UI Observatory*
2018-Present	**General Astronomy Lab**, Lab Coordinator Role	*University of Idaho*
2017-Present	**Planetary Science Journal Club**, Participant	*University of Idaho*
Jun 2021	**VPLanet Developer's Workshop**, Participant	*Virtual*
2020	**Division of Planetary Science Conference VOC**, Committee Member	*Virtual*
Aug 2020	**Boise Astronomical Society Meeting**, Guest Speaker	*Virtual*
2015-2017	**Monthly Public Star Parties**, Telescope Operator	*Boise State University*

Peer Review

Reviewer for *Icarus* since May 2021

Professional Memberships

American Astronomical Society
Division of Planetary Science
Division of Dynamical Astronomy