

Gregor Benjamin Steinbrügge, PhD

PERSONAL DATA

PLACE AND DATE OF BIRTH: Berlin, Germany — 1987 January 16
NATIONALITY: German
EMAIL: gregor.steinbruegge@dlr.de

PROFESSIONAL EXPERIENCE

MAY 2018 – PRESENT	UNIVERSITY OF TEXAS AT AUSTIN, Institute for Geophysics, Postdoctoral Fellow REASON Science Data System Radar geodesy with SHARAD Europa ice shell processes Affiliated to the Europa Clipper Mission
JANUARY 2014 – MARCH 2018	GERMAN AEROSPACE CENTER – DLR, in the Institute of Planetary Research, Department of Planetary Geodesy, Berlin PhD candidate Viscoelastic tides of icy satellites and Mercury Laser altimetry Affiliated to the Ganymede Laser Altimeter aboard the Jupiter Icy Moon Explorer (JUICE) Affiliated to the BepiColombo Laser Altimeter aboard the Mercury Planetary Orbiter (MPO)
OCTOBER 2015 – JANUARY 2016	JET PROPULSION LABORATORY , Pasadena, California Visiting scientist Investigating altimetric radar capabilities of REASON aboard the Europa Clipper
MARCH 2011 – DECEMBER 2013	GERMAN AEROSPACE CENTER – DLR, in the Institute of Planetary Research, Department of Planetary Sensor Systems, Berlin Student research assistant Thermal analysis and testing of the BepiColombo Laser Altimeter.

EDUCATION

- JANUARY 2014 – MARCH 2018 PH.D. (SUMMA CUM LAUDE),
at the Technical University Berlin
Advisory board:
Prof. Dr. Jürgen Oberst
Prof. Dr. Nicolas Thomas
Prof. Dr. Tilman Spohn
- NOVEMBER 2005 – OCTOBER 2010 DIPLOMA (equivalent to Master of Science) in PHYSICS
Minor in AEROSPACE ENGINEERING
Freie Universität Berlin
Thesis: Thermal analysis and testing of the
BepiColombo Laser Altimeter
Advisor: Prof. Dr. Heike Rauer
- MARCH 2009 – FEBRUARY 2010 Exchange student at the Ecole normale Supérieure Lyon,
France

AWARDS

- JANUARY 2018 Lacmann Fellowship
2014 Outstanding Student Poster and PICO (OSPP) Award
European Geosciences Union
Planetary Sciences Division
EGU General Assembly

ACTIVE PARTICIPATION IN SPACE MISSIONS AND WORKSHOPS

- 2018 Keck Institute for Space Studies
Tidal Heating – Lessons from Io and the Jovian System
- 2017 – PRESENT BepiColombo geodesy and geophysics working group
- 2017 – PRESENT Europa Clipper geodesy working group
- 2016 – PRESENT REASON altimetry working group
- 2018 – PRESENT REASON science data system
- 2016 – PRESENT BepiColombo science working team
- 2015 – PRESENT JUICE science working team

ACADEMIC ADVISING AND MENTORING

- 2017 Martjin Smeets, B.Sc. student, Technical University Delft
- 2015 Teresa Steinke, M.Sc. student, Karlsruhe Institute of Technology
Trung Nam, M.Sc. student, Technical University, Berlin
Tim Schulze, B.Sc. student, Humboldt University, Berlin

OUTREACH

- 2017 DLR Open Door Event (Long Night of the Sciences)
Speaker: Planets in Movies
Spaceice - Ice cream with liquid nitrogen
- 2016 DLR Open Door Event (Long Night of the Sciences)
Spaceice - Ice cream with liquid nitrogen
- 2015 DLR Open Door Event (Long Night of the Sciences)
Speaker: Tides of the Solar System

LANGUAGES

MOTHER TONGUE: German
FLUENT: English
FLUENT: French

PEER-REVIEWED PUBLICATIONS

- 2018 G.Steinbrügge, D.M.Schroeder, M.S.Haynes, H.Hussmann, C.Grima and D.D. Blankenship
Assessing the potential for measuring Europa's tidal Love number h_2 using radar sounder and topographic imager data.
Earth and Planetary Science Letters. Vol. 482, 334-341
doi: [10.1016/j.epsl.2017.11.028](https://doi.org/10.1016/j.epsl.2017.11.028)
- A. Stark, J. Oberst, F. Preusker, S. Burmeister, G. Steinbrügge, H. Hussmann
The reference frames of Mercury after the MESSENGER mission.
Journal of Geodesy (2018) 92:949–961.
doi [10.1007/s00190-018-1157-8](https://doi.org/10.1007/s00190-018-1157-8)
- G. Steinbrügge, A. Stark, H. Hussmann, J. Oberst
The performance of the BepiColombo Laser Altimeter (BELA) prior launch and prospects for Mercury orbit operations.
Planetary and Space Science 159 (2018) 84-92.
doi: [10.1016/j.pss.2018.04.017](https://doi.org/10.1016/j.pss.2018.04.017)
- G. Steinbrügge, S. Padovan, H. Hussmann, T. Steinke, A. Stark, J. Oberst
Viscoelastic Tides of Mercury and the Determination of its Inner Core Size.
Journal of Geophysical Research: Planets, 123, 2760–2772.
doi: [10.1029/2018JE005569](https://doi.org/10.1029/2018JE005569)
- H. Hussmann, J. Oberst, A. Stark, G. Steinbrügge
The BepiColombo Laser Altimeter (BELA): An instrument for geodetic investigations of Mercury
Chapter in Planetary Remote Sensing and Mapping
Editors: Bo Wu, Kaichang Di, Jürgen Oberst, Irina Karachevtseva
ISBN: 9780429000515
- 2017 H. Hussmann, D. Shoji, G. Steinbrügge, A. Stark and F. Sohl
Constraints on dissipation in the deep interiors of Ganymede and Europa from tidal phase-lags.
Celestial Mechanics and Dynamical Astronomy. Vol. 126, pp. 131-144.
doi: [10.1007/s10569-016-9721-0](https://doi.org/10.1007/s10569-016-9721-0)
- 2015 G. Steinbrügge, A. Stark, H. Hussmann, F. Sohl and J. Oberst
Measuring tidal deformations by laser altimetry.
A performance model for the Ganymede Laser Altimeter.
Planetary and Space Science. Vol. 117, pp. 184-191.
doi: [10.1016/j.pss.2015.06.013](https://doi.org/10.1016/j.pss.2015.06.013)

CONFERENCE PRESENTATIONS

2018 Gregor Steinbrügge,
PRIME– A concept for passive radar investigation of Jupiter’s moon Io
(and other terrestrial bodies) - *invited*
AGU Fall meeting 2018, 10.– 14. Dec. 2018, Washington, D.C.

Gregor Steinbrügge, Joana R. C. Voigt, Alexander Stark, Bernd Giese,
Dustin M Schroeder, Mark Haynes, Duncan A Young, Cyril Grima, Hauke Hussmann,
and Donald D Blankenship
Reassessing the surface roughness of Europa using Galileo stereo images.
AGU Fall meeting 2018, 10.– 14. Dec. 2018, Washington, D.C.

Christine McCarthy, McEwen Alfred, Katherine de Kleer, Ryan S. Park, Carver Jay Bierson,
Daniella DellaGiustina, Krishan K. Khurana, Ashley Gerard Davies, Anton Ermakov,
Jim Fuller, Christopher Hamilton, Camilla D. K. Harris, Hamish Hay, Kenneth Hibbard,
Robert A. Jacobson, James Tuttle Keane, Valery Lainey, Isamu Matsuyama, Francis Nimmo,
Mark P. Panning, Julie Rathbun, Gregor Steinbrügge, Victor C. Tsai, David J Stevenson,
Elizabeth P Turtle, and Anne Pommier
How do planetary bodies respond to periodic tidal forcing and how does that
influence heat flow and orbital evolution?– Report from the KISS Workshop entitled
“Tidal Heating-Lessons from Io and the Jovian System”
AGU Fall meeting 2018, 10.– 14. Dec. 2018, Washington, D.C.

Duncan A. Young, Cyril Grima, Gregor Steinbrügge, Kirk Michael Scanlan,
Scott D. Kempf, Donald D. Blankenship and REASON team
REASON For Europa: Data products and algorithms.
AGU Fall meeting 2018, 10.– 14. Dec. 2018, Washington, D.C.

Joana R. C. Voigt, Christopher Hamilton, Stephen P. Scheidt, Gregor Steinbrügge,
Ulrich Münzer, Armann Hoskuldsson, Ingibjörg Jónsdóttir, Thor Thordarson
and Patrick Whelley
Facies Characterization of the 2014–2015 Holuhraun Lava Flow Field from Remote Sensing
Data and Field Observations.
AGU Fall meeting 2018, 10.– 14. Dec. 2018, Washington, D.C.

G. Steinbrügge, Sebastiano Padovan, Hauke Hussmann, Teresa Steinke,
Alexander Stark, and Jürgen Oberst
Viscoelastic Tides of Mercury and Implications for its Inner Core Size
EPSC, Berlin, Germany, 16-21 September 2018.

Alexander Stark, Jürgen Oberst, Hauke Hussmann, and Gregor Steinbrügge
Mercury’s rotational state from self-registration of Mercury Laser Altimeter profiles
EPSC, Berlin, Germany, 16-21 September 2018.

Hauke Hussmann, Kay Lingenauber, Reinald Kallenbach, Jürgen Oberst, Keigo Enya,
Masanori Kobayashi, Noriyuki Namiki, Jun Kimura, Nicolas Thomas, Luisa Lara,
Gregor Steinbrügge, Alexander Stark, Christian Hüttig, Fabian Lüdicke, Horst-Georg Lötze
Thomas Behnke, Christian Althaus, Simone del Togno, Belinda Wendler, and Harald Michaelis
The Ganymede Laser Altimeter (GALA) for ESA’s Jupiter Icy Moons Explorer (JUICE) Mission
EPSC, Berlin, Germany, 16-21 September 2018.

G. Steinbrügge, Lida Fanara, David Haack, Maximilian Hamm, Alexandra Heffels, Maxime Maurice, Athanasia Nikolaou, Yaquelin Miriam Rosas Ortiz, Indhu Varatharajan, Dustin Schroeder, Konstantinos Zikidis, Hauke Hussmann, and Tilmann Spohn
PRIME – A concept for passive radar investigation of Jupiter’s moon Io
EPSC, Berlin, Germany, 16-21 September 2018.

G. Steinbrügge, S. Padovan, H. Hussmann, T. Steinke, A. Stark, J. Oberst
Viscoelastic Tides of Mercury and Implications for its Inner Core Size
49th Lunar and Planetary Science Conference (LPSC)
Woodlands, TX, 19-23 March 2018, Abstract 1978.

J. R. C. Voigt, C. W. Hamilton, L. Fanara, and G. Steinbrügge
A revised Geologic History for the Major Flow Units in Eastern Elysium Planitia, Mars.
49th Lunar and Planetary Science Conference (LPSC)
Woodlands, TX, 19-23 March 2018, Abstract 1493.

G. Steinbrügge, S. Padovan, H. Hussmann, T. Steinke, A. Stark, J. Oberst
Viscoelastic Tides of Mercury and Implications for its Inner Core Size
EGU 2018 General Assembly, Vienna

G. Steinbrügge, L. Fanara, D. Haak, M. Hamm, A. Heffels, M. Maurice, A. Nikolaou, Y. Rosas-Ortiz, A. Heffels, I. Varatharajan, D. Schroeder, K. Zikidis, H. Hussmann, T. Spohn
PRIME - A concept for passive radar investigation of Jupiter’s moon Io.
EGU 2018 General Assembly, Vienna

2017 G. Steinbrügge, A. Stark., H. Hussmann, K. Wickhusen and J. Oberst
Prospects for the future investigations of Mercury by the BepiColombo Laser Altimeter (BELA)
EGU 2017 General Assembly, Abstract 9246, Vienna

H. Hussmann, D. Shoji, G. Steinbrügge, A. Stark and F. Sohl
Dissipation in the deep interiors of Ganymede and Europa
EGU 2017 General Assembly, Abstract 9527, Vienna

R. Thor, R. Kallenbach, U. Christensen, J. Oberst, A. Stark and G. Steinbrügge
Improved algorithms for the retrieval of the h_2 Love number of Mercury from laser altimetry data
EGU 2017 General Assembly, Abstract 7789, Vienna

A. Stark, H. Hussmann, G. Steinbrügge, P. Gläser, K. Gwinner, J. Oberst, M. Casasco and G. Cremonese
In-flight alignment calibration between a laser altimeter and an imaging system – Application to the BepiColombo mission
EGU 2017 General Assembly, Abstract 8364, Vienna

G. Steinbrügge, D.M. Schroeder, M.S. Haynes, H. Hussmann, C. Grima, and D.D. Blankenship
Assessing the potential for measuring Europa’s tidal Love number h_2 using radar sounder and topographic imager data
EGU 2017 General Assembly Abstract 9205, Vienna

- 2016 C. Althaus, H. Hussmann, K. Lingenauber, K. Kallenbach, H. Michaelis, J. Oberst, S. Del Tognò, Simone, G. Steinbrügge, K. Enya and M. Kobayashi
The Ganymede Laser Altimeter – Instrument design overview with radiation hard transmitter.
3rd International Workshop on Instrumentation for Planetary Missions, 24.–27. Okt. 2016, Pasadena, USA.
- 2015 G. Steinbrügge, H. Hussmann, A. Stark and F. Sohl
Measuring Ganymede's Tidal Deformation by Laser Altimeter.
12th Annual Meeting Asia Oceania Geosciences Society (AOGS), 2. Aug. – 7. Aug., Singapore.
- G. Steinbrügge, H. Hussmann, F. Sohl and J. Oberst
The impact of ice I rheology on interior models of Ganymede:
The elastic vs. the visco-elastic case.
EGU General Assembly, 12.–17. Apr, Vienna.
- G. Steinbrügge, H. Hussmann, A. Stark, F. Sohl and J. Oberst
Measuring Ganymede's Tidal Deformation by Laser Altimetry:
A performance Analysis for the GALA Experiment.
AGU Fall meeting 2015, 14.– 18. Dec. 2015, San Francisco.
- T. Steinke, A. Stark, G. Steinbrügge, H. Hussmann and J. Oberst
Estimation of Ganymede's Topography, Rotation and Tidal Deformation
- a Study of Synthetic Ganymede Laser Altimeter Observations.
European Planetary Science Congress 27. Sept – 02. Okt., Nantes.
- J. Voigt, E. Hauber, D. Reiss, H. Hiesinger, A. Johnsson, S. van Gasselt, M. Balme, J.W. Head, J.P. de Vera, G. Steinbrügge, R. Jaumann
Topographic control of sorted circle morphology on Svalbard.
EGU General Assembly, 12. April – 17. April 2015, Vienna, Austria.
- G. Steinbrügge, H. Hussmann, K. Lingenauber, J. Oberst, M. Kobayashi, J. Kimura, N. Thomas and L.M. Lara
The Ganymede Laser Altimeter (GALA).
EPSC 2014, Cascais, Portugal.
- G. Steinbrügge, H. Hussmann, H. Michaelis, M. Kobayashi, N. Namiki, N. Thomas, K. Seiferlin and L. M.Lara
The GALA Laser Altimeter.
IGARSS 2014, 13.–18. Jul 2014, Quebec, Canada.
- G. Steinbrügge, H. Hussmann, A. Stark and J. Oberst
Measuring Ganymede's tidal deformation by laser altimetry:
Application to the GALA experiment.
EGU 2014, 27. Apr. – 02. Mai 2014, Vienna

ACTIVE MISSION PARTICIPATION

- 2017 – PRESENT BepiColombo geodesy and geophysics working group
- 2017 – PRESENT Europa Clipper geodesy working group
- 2016 – PRESENT BepiColombo science working team
- 2015 – PRESENT JUICE science working team

TEACHING EXPERIENCE

- 2017 Guest Lecturer for *Selected Topics in Planetary Science*, TU Berlin
 - Interior Structure*
 - Tides*
 - Galilean Satellites*
 - Ring Systems*

- 2006 – 2010 Teaching Assistant and Laboratory Tutor.

ACADEMIC ADVISING AND MENTORING

- 2017 Martjin Smeets, B.Sc. student, Technical University Delft
- 2015 Teresa Steinke, M.Sc. student, Karlsruhe Institute of Technology
- Trung Nam, M.Sc. student, Technical University, Berlin
- Tim Schulze, B.Sc. student, Humboldt University, Berlin

OUTREACH

- 2019 Article - The Tides of Mercury
on Sciencetrends.com
- 2017 DLR Open Door Event (Long Night of the Sciences)
Speaker: Planets in Movies
Spaceice - Ice cream with liquid nitrogen
- 2016 DLR Open Door Event (Long Night of the Sciences)
Spaceice - Ice cream with liquid nitrogen
- 2015 DLR Open Door Event (Long Night of the Sciences)
Speaker: Tides of the Solar System