

# Tomke Lompa

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## Area of Interests

Potential Fields Geophysics, Gravity & Satellite gravimetry, Magnetism, Earth Sciences, Earth Moon system, Bombardment history of the Moon, Origin of the Moon

## Education

- 2016 - present**      Museum für Naturkunde Berlin, Invalidenstr. 43, 10115 Berlin  
*PhD candidate*  
Thesis (in progress): Formation mechanisms and long-term evolution of large impact basins on the Moon  
Supervisors: Prof. Dr. Kai Wünnemann
- 2013 - 2016**      Christian-Albrechts-University of Kiel, Christian-Albrechts-Platz 4, 24118 Kiel  
*MSc Geophysics*  
Thesis: The crust of the Arabian Shield-A 3D model derived from magnetic satellite, terrestrial gravity and heat flow data  
Supervisors: Prof. Dr. Jörg Ebbing and Walter D. Mooney (USGS, Menlo Park (California))
- 2010 - 2013**      Christian-Albrechts-University of Kiel, Christian-Albrechts-Platz 4, 24118 Kiel  
*BSc Geosciences*  
Thesis: 3D-Modellierung der Dichte und Suszeptibilitätsstruktur des Rodderbergs bei Bonn (A 3D modeling of the density and susceptibility structure of the Rodderberg volcano near Bonn)  
Supervisors: Dr. Sabine Schmidt and Dr. Gerald Gabriel (LIAG)
- 2009 - 2010**      Christian-Albrechts-University of Kiel, Christian-Albrechts-Platz 4, 24118 Kiel  
*BSc Physics of the Earth System*  
without graduation

## Work Experiences/Internships

**Jul 2016 - present** - Museum für Naturkunde Berlin, Invalidenstr. 43, 10115 Berlin  
*Scientist in the project TRR170-A4: Late Accretion onto terrestrial planets*

Large impact basins are prominent landforms on the Moon and remnants of the late accretion phase when the early Earth-Moon system formed (time markers). With the use of remote sensing data (LRO mission (topographic data) and GRAIL mission (gravity measurements)) we want to obtain a full inventory of lunar impact basins. We perform numerical simulations to investigate the lunar basin formation process (e.g. modification processes, distribution and mixing of ejected material and impact melt), and use remote sensing data to constrain our models. To consider the state of lunar environment (hot/cold Moon) we include information about the thermal state of the Moon in our simulations. We can show that the pre-impact thermal structure influences the shape of the modeled gravity signature and based on this we can draw conclusions from gravity to the thermal pre-impact target conditions. These findings lead to a much better understanding on how the thermal evolution of the Moon is related to changes on the formation of basins.

**Technologies:** python, iSALE, QGIS, LaTeX

**January 2016** - Shell Oil Company, Houston  
*Internship as MSc Student*

I stayed the Shell company in Houston (Texas) for modeling the magnetic field as a part of my Masters thesis. I had the chance to work in a team and to learn a lot about handling magnetic data sets as well as about interpretation of those.

**Technologies:** MATLAB, Geosoft

**Aug 2015 - Sep 2015** - USGS Menlo Park, 345 Middlefield Rd, Menlo Park, CA 94025, United States  
*Internship as MSc Student*

As a part of my Masters thesis I have stayed at the USGS in the team of Walter D. Mooney for two months. I collected geologic, tectonic and geophysical information and prepared the modeling process for the further work. I got information about gravity and magnetic data sets from Richard J. Blakely and Victoria E. Langenheim. I gave talks about my Bachelor- and Masters thesis and discussed with employees from the Saudi Geological Survey (SGS) about the usefulness of magnetic modeling.

**Technologies:** MATLAB, QGIS

**Feb 2014 - Jul 2015** - Christian-Albrechts-University of Kiel, Christian-Albrechts-Platz 4, 24118 Kiel  
*Student research assistant for the software IGMAS+*

Testing the functionalities of the 3D potential field modeling software IGMAS+ for further development. Writing work flows about functionalities and development of ideas for improved usability.

**Technologies:** MATLAB, IGMAS+, LaTeX

**Aug 2012 - Sep 2012** - Leibniz Institute for Applied Geophysics (LIAG) , Stilleweg 2, 30655 Hannover  
*Internship*

The internship was in the working group of gravity and potential fields of Dr. Gerald Gabriel. First experiences with forward modeling of gravity data and using the software IGMAS+.

**Technologies:** MATLAB, IGMAS+

## Skills

- **Programming Languages/Software**

*MATLAB, python*  
*IGMAS+, Geosoft, iSALE, QGIS*  
*LaTeX, MS Office*

- **Knowledge**

Geophysics (especially about gravity and magnetic fields), numerical modeling, forward 2D/3D modeling of potential fields, geological background

## Participated Grants

- 2019: LMI Travel Award
- 2016: German Research Foundation (DFG) SFB TRR170, project A4

## Conferences

- Sep 2019 (upcoming): LMI (Large Meteorite Impacts and Planetary Evolution), Brazil, United States, poster
- Sep 2019 (upcoming): EPSC-DPS Joint Meeting 2019, Geneva, Switzerland, poster
- Dec 2018: AGU Fall Meeting, Washington D.C., United States, poster
- Sep 2018: EPSC, Berlin, Germany, oral presentation
- May 2017: ELS (European Lunar Symposium), Münster, Germany, oral presentation
- Mar 2017: 77th DGG Annual Meeting, Potsdam, Germany, oral presentation

## Publications

- Lompa, T.; Wünnemann, K.; Zhu, M.-H. (2018): Formation of Impact Basins on the Moon - Insights from Numerical Modeling, Gravity and Remote Sensing Data, *American Geophysical Union, Fall Meeting 2018*, Abstract P31G-3782.
- Lompa, T.; Wünnemann, K.; Zhu, M.-H. (2018): Formation of impact basins on the moon - insights from numerical modeling, gravity and remote sensing data, *European Planetary Science Congress 2018*, Abstract EPSC2018-224.
- Fröchtenicht, T.; Wünnemann, K.; Zhu, M.-H. (2017): Formation of impact basins on the moon - insights from numerical modeling, gravity and remote sensing data, *European Lunar Symposium*.
- Fröchtenicht, T.; Wahl, D., Wünnemann, K.; Oberst, J. (2017): The formation of impact basins on the Moon - combination of numerical modeling, gravity and remote sensing data, *77th DGG Annual Meeting*, Abstract EP.1-003.