Jean-Paul Breuer

Personal Data

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GitHub:	http://www.github.com/jpbreuer

Education

2018 - 2022 — Doctor of Philosophy (Ph.D.), Theoretical Physics and Astrophysics at
European Southern Observatory / Masaryk University Brno

Telescope Experience: APEX telescope (Chile - 2 Weeks); IRAM 30 meter (Spain - 1 Week)
Grants: ESO Studenthip (€24,000); IGA MU Grant (€25,000)

Advisor: Dr. Norbert Werner – wernernorbi@gmail.com
Co-Advisor: Dr. Tony Mroczkowski – tony.mroczkowski@eso.org

Publications: *"The mergers in Abell 2256: displaced gas and its connection to the radio-emitting plasma" Breuer et al. 2020, MNRAS (arXiv:2005.10263)*

2015 - 2017 — Master of Science in Engineering (MScEng), Earth and Space Physics and Engineering at
Technical University of Denmark

Study Line: Space Research – Data Processing in Astrophysics
Thesis: *"Distribution of the Gas Temperature in the Galaxy Cluster A2256"*
Advisor: Dr. Desiree Della Monica Ferreira – desiree@space.dtu.dk

2011 - 2015 — Bachelor of Science (BSc), Earth and Space Sciences at
Jacobs University Bremen / International University Bremen

Specialisation: Geophysics and Planetary Sciences
Thesis: *"Mapping of Earth's Bow Shock using Cluster Spacecraft Crossings"*
Advisor: Dr. Joachim Vogt – j.vogt@jacobs-university.de

Work Experience

Jun 2016 - Sep 2016
Greenbelt, USA

Visiting Researcher at **NASA Goddard Spaceflight Center**;
Heliophysics and Space Weather, Community Coordinated Modeling Center

- Acquired a thorough understanding of typical numerical simulations and models currently used for research at the Heliophysics and Space Weather Bootcamp.
- Processed and analyzed satellite data regarding the effects of geomagnetic storms, radiation belt enhancement events, and ionizing doses over various shielding thicknesses with Dr. Yihua Zheng.
- Obtained neutron and magnetometer data for an analysis of correlation regarding single event upsets on ground based data centers with Dr. Leila Mays.

Oct 2015 - Jul 2017
Copenhagen, Denmark

Student Assistant at **DTU Space** and **National Space Institute**

- Prepared code and magnetometer data for Prof. Dr. Susanne Vennerstrøm to give to participants in the International Space Science Institute (ISSI) workshop on Field-Aligned Currents.
- Created a database of Interplanetary Coronal Mass Ejections using both the Richardson and Cane database and NASA's Space Weather Database Of Notifications, Knowledge, Information (DONKI).
- Generated daily orbit files containing magnetometer data for SWARM satellites; built a real time STEREO A Beacon data aggregation tool for ESA related space weather forecasting.

Jun 2014 - Sep 2014
Munich, Germany

Visiting Researcher at **Max Planck Institut für Astrophysik**
Excellence Cluster Universe

- Acquired a basic understanding of the current research areas of gravitational lensing and the cosmic microwave background radiation (CMB) through literature study and discussions with experts. Became familiar with basic numerical simulations and data analysis techniques in astrophysics (in particular regarding gravitational lensing and CMB).
- Developed, implemented, and tested a python software module for simulating and analyzing observations of gravitational lensing of the CMB in the flat-sky approximation using Information Field Theory, resulting in cheaper, higher-resolution CMB lensing.

Jun 2013 - Aug 2013
Manaus, Brazil

Visiting Researcher at **EcoHealth Alliance**

- Worked with PREDICT and the Deep Forest Project in scientific excursions to fragmented and pristine forest environments to aid in the capture of Rodents, Marsupials, Bats, and Primates for collection of biological samples to send to a virology lab at USP (Universidade de São Paulo) in an effort to model the spread of disease both in and out of the jungle.
- Developed various rainforest survival skills, as well as learned how to set up Tomahawk and Sherman traps (primates/rodents/marsupials), and Harp and Canopy traps (bats).

Jun 2013 - Aug 2013
Manaus, Brazil

Visiting Researcher at **Max Planck Institut für Chemie**,
National Institute of Amazonian Research (INPA)

- Participated in a scientific excursion to a swamp forest in central Amazonia under Dr. John Ethan Householder collecting endemic plants as part of a PhD project in biodiversity modeling within extreme environments.
- Engaged with the organization of botanical collections and plant identification at the INPA-herbarium, contributed several rare species to the INPA entomology collection collected while on excursion.

Other Projects

Oct 2015 - Current
Copenhagen, Denmark

Founder of **CopenHacks** (http://copenhacks.com)
at **Microsoft Development Center Copenhagen**

- Founded and organized an international student hackathon in Denmark for several hundreds participants from more than 30 nationalities that took place in the Microsoft Development Center in Copenhagen; securing 100,000+ Danish Kroner from sponsors and supporters such as Microsoft, Bloomberg, and Major League Hacking.
- Managed and coordinated a team of volunteers who helped run the internal logistics and other aspects during the event.
- Informally acquired by Microsoft on February 18th, 2019.

Skills & Expertise

Operating Systems: ArchLinux, OS X *(Proficient)*; Windows *(Working Knowledge)*

Statistics, Modeling, and Mapping Platforms: Matlab, XSPEC, Blender, GIMP *(Proficient)*; IDL, R, Unity3D, ArcGIS/KML, GMT, ISIS [planetary data] *(Working Knowledge)*

Programming, Scripting, and Frameworks: Bash, LaTeX, Python *(Proficient)*; HTML/CSS/JS *(Working Knowledge)*; Angular.JS/Node.JS, Java/XML, C#/C++ *(Basic Skills)*

Languages: English, Portuguese *(Native)*; Chinese [HSK3 - 上海交通大学] *(Conversational)*; Spanish, German *(Limited)*