

Chris Moeckel | Resume

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Born: 06/23/1991

Work Experience

California Institute of Technology – NASA Jet Propulsion Laboratory

USA

Graduation Project, Duration: 12 months

2016 – 2017

Radio emissions from Jupiter are characterized by thermal emission from Jupiter and synchrotron radiation from accelerated electrons in the magnetic field. A better understanding of the Cassini RADAR instrument permitted a retrieval of both emissions through the use of a forward model, where the uncertainties were obtained with a Markov chain Monte Carlo simulation. The revised measurement allowed for constraining possible causes for temporal variability.

Max-Planck Institute for Solar System Research

Germany

Internship, Duration: 9 months

2015 – 2016

The Martian thermosphere is a unique region in the atmosphere that is equally driven by processes from above and below. The comparison between simulation and remote sensing observations allows valuable insights into these processes. I was directly involved in advancing the in-house global circulation model (MAOAM) and compared the model results to retrievals by the MAVEN spacecraft. As part of the participating scientist program my supervisor and I published our results in the Journal of Geophysical Research Letters (two more publications are in preparation).

Education

Delft - University of Technology

The Netherlands

Master of Science in Spaceflight, GPA: 4.0 (www.wes.org) (Ranking: Top <1%)

2014 – 2017

Specialization in space systems engineering, astrodynamics and planetary sciences.

Delft - University of Technology

The Netherlands

Bachelor of Science in Aerospace Engineering, GPA: 4.0 (Ranking: Top <3%)

2010 – 2013

Broad focus on programming, aerodynamics, systems engineering and soft skills development

Singapore - Nanyang Technological University

Singapore

Academic Exchange, GPA: 4.0

aug–dec 2012

Specialization in robotics, electronic circuits and real-time programming.

Bachelor Graduation Project

Title: *Design of a Controllable Inflatable Aeroshell*

Supervisors: Stephen P. Sandford: Director of the Engineering Directorate at NASA Langley

Dr. Herman Damveld: Assistant Professor at Delft - University of Technology

Description: Design of a human precursor mission for the manned exploration of Mars with a focus on the entry vehicle. My personal field concerned the entry trajectory using a predictor - corrector algorithm and its optimization. In the end, I was awarded the highest score out of all graduating student of the year and I presented our work at the International Planetary Probe Workshop 12 in Cologne.

Relevant Experience

GLINT - ESA proposal to measure gravitational waves

Austria

ESA Summer School

2015

Next to the orbit design for the low noise interferometric measurements, my official role as team leader was to organize and represent our team. Our team efforts were rewarded with a prize for the best presentation. I was awarded a grant to support our publication by the Austrian Research Promotion Agency (Publication in preparation)

ATHENEA - ESA proposal to study main asteroid belt

The Netherlands

Planetary Science

2015

The main asteroid belt is populated by very diverse asteroids. The clear distinction between comets and asteroid is blurred by the discovery of Main Belt Comets having orbital characteristics of asteroids, but physical properties of comets. ATHENEA is a proposal to explore P/2013 R3, a recently fragmented main belt comet through the use of small CubeSats that allow for exploring the individual fragments. (Presented at the International Planetary Probe Workshop 13, 2016)

Extracurricular

Bicycle Expedition

South America

Gap Year

2013 – 2014

Personal journey helped me understand the continent, people and myself. This year gave me ample opportunity to focus on my creative side through reading, writing, and photography.

United Shuttles Smashing Right

Netherlands

Vice-President at University Badminton Club

2011 – 2013

Badminton Club within the Sports Centre of the University with 80 active members. Task included documented meetings, organizing the finances for the upcoming years, negotiation with sponsors and the University. My commitment also included training the beginner's squad and being the team captain of the C team.

Languages

Fluent: German (native), English **Proficient:** Spanish, Dutch

Computer skills

Programming: **Advanced:** Matlab, FORTRAN, IDL, SPICE **Experience in:** C, Assembly

Awards

Academic: Justus en Louise van Effen scholarship – Merit-based grant to support excellent students during their graduation project.

Academic: Austrian Research Promotion Agency – Grant to support the publication of GLINT (ESA summer school).

Professional: Second place in the Best Graduate Program – A national competition focused on professional and soft skills of international students in the Netherlands.

Interests

Academic: Atmospheres, human space exploration, CubeSats

Personal: Getting acquainted with new cultures, reading, photography, learning new languages

Publications

Published

Medvedev, A. S., Nakagawa, H., Mockel, C et al., (2016), Comparison of the Martian thermospheric density and temperature from MAVEN/IUVS data and general circulation modeling, *Geophys. Res. Lett.*, 43, 3095–3104

Submitted

Mockel, C., et al. (2017), Constraining a Martian general circulation model with the MAVEN/IUVS observations in the thermosphere, *J. Geophys. Res.*

Aria et al. (2017), GLINT - Gravitational-wave Laser INterferometry Triangle, *Experimental Astronomy*

In Preparation

Nakagawa, H., Medvedev, A.S., Mockel, C., et al. (2017), Gravity waves distribution inferred from MAVEN/IUVS occultation, *Geophys. Res. Lett.*

Mockel, C. et al., (2017), Recalibration of the Cassini RADAR measurements of Jupiter, *Icarus*