

## Curriculum Vitae – Prof. Dr. JOACHIM SAUR

Dr. Joachim Saur  
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### Education

- Ph.D., 2000, Geophysics (highest honors), University of Cologne, Germany  
Title: Plasma Interaction of Io and Europa with the Jovian Magnetosphere
- Diplom, 1995, Physics, University of Stuttgart and University of Cologne, Germany

### Professional Experience

2005 - present: Full Professor for Geophysics, University of Cologne, Germany  
2011 & 2015: Visiting Professor, Johns Hopkins University  
2003 - 2005: Senior Research Scientist, JHU/Applied Physics Laboratory, USA  
2001 - 2002: Postdoctoral Fellow, Johns Hopkins University, Baltimore, USA  
2000 - 2001: Postdoctoral Researcher, Observatoire de la Côte d’Azur, Nice, France  
1996 - 2000: Research Assistant, Univ. of Cologne, Germany  
1995 - 1995: Visitor Bartol Research Institute, and Johns Hopkins University, USA

### Research

*Interests:* Planetary sciences and space physics, including planetary moons and the search for liquid water, extrasolar planets, brown dwarfs, magnetospheres, aurorae, turbulence in space plasmas

*Interdisciplinary Interests:* Neurology (Signal transport in patients with Parkinson’s disease)

*Methods:* Theory, numerical modeling, telescope and satellite observations, time-series analysis

**Identifiers:** ORCID 0000-0003-1413-1231, Web of Science ResearcherID V-6780-2019

### Awards, Honors

ERC-Advanced Grant, 2020: Searching and Characterizing Extraterrestrial Subsurface Oceans (acronym: Exo-Oceans)

Induction into Society of Scholars, Johns Hopkins University, 2017

Gauss-Lecture of German Geophysical Society, 2010 (given at European Geoscience Union General Assembly)

Outstanding Student Paper Award, 1999 (American Geophysical Union)

### Professional Affiliations

Deutsche Geophysikalische Gesellschaft

American Geophysical Union

Europlanet Society

Division of Planetary Sciences of the American Astronomical Society

### Mission Participation & Science Projects

Hubble Space Telescope, PI in Cycle 16 (2008), Cycle 18 (2010), Cycle 20 (2012), Cycle 24 (2016), Cycle 27 (2019), Co-I in multiple Cycles (2007, 2009, 2013, 2014, 2015, 2016, 2017, 2019, 2020)

James Webb Space Telescope, Collaborator, Cycle 0, Early Release Science  
ALMA, Co-I, Cycle 7  
Collaborator on NASA's JUNO mission (a Jupiter polar orbiter)  
Co-I on Esa's JUICE mission (Jupiter Icy Moons Explorer) for RWPI and J-MAG instruments  
Co-I on NASA's Europa mission for UVS-instrument and collaborator for PIMS (Particle) instrument

### **Services**

Board of Reviewing Editors for journal *Science* (2021 –)  
Speaker of Competence Area: Quantitative Modeling of Complex Systems, within Excellence Initiative of Univ. of Cologne (2013-present)  
Hubble Space Telescope, Time Allocation Committee, Cycle 14 (2005), Mid-Cycle 24 (2017), Mid-Cycle 25 (2018), External Reviewer Cycle 26 (2018), Mid-Cycle 27 (2019)  
European Southern Observatory, Observing Programmes Committee, Cycles 82, 83 (2008)  
ALMA, Time Allocation Committee, Cycle 1, 2, 3 (2012, 2014, 2015)  
Chair Department of Geosciences, University of Cologne (2008-2009, 2013-2015).  
Associated Editor, Journal of Geophysical Research, Space Physics (2008-2011)  
Head of Planet Section of German Arbeitsgemeinschaft Extraterrestr. Forschung (2009-2017)  
Jury Member, Francqui Foundation, 2015

### **Host/Organization of Conferences and Meetings**

Workshop on the Jupiter system, University of Cologne, July, 6-7 2000;  
Conference: Magnetospheres of the Outer Planets, University of Cologne, July, 2009;  
Annual Meeting of German Geophysical Society and Arbeitskreis Extraterrestr. Forschung, Univ. Cologne, February, 2011  
Conference: Numerical Techniques in MHD Simulations, Cologne, August, 2017

### **Talks for Public Outreach**

Regular talks at Planetariums, Girls Days, Kinderuniversitaet, etc.

**Press coverage of publications in:** New York Times, BBC, Le Monde, Washington Post, USA Today, National Public Radio, Spiegel Online, Sueddeutsche Zeitung, Frankfurter Allgemeine, Zeit, Koelner Stadtanzeiger, etc.

## **Publications**

121 peer-reviewed publications, including 8 publications in Nature & Science, 1 in Nature Astronomy, and 7 Book Chapters, H-Index: 33 (after Web of Science) and 41 (after Google Scholar)

### **Peer-Reviewed Publications & Book Chapters**

1. **Saur J**, Mini-magnetospheres and Moon-magnetosphere Interactions: Overview Moon-magnetosphere Interactions, in *AGU Books Space Physics and Aeronomy: Magnetospheres*, ed. R. Maggiolo, N. André, H. Hasegawa, D. Welling, in press, [arxiv.org/abs/1908.06446](https://arxiv.org/abs/1908.06446), 2020

2. Szalay, J. R.; Allegrini, F.; Bagenal, F.; Bolton, S. J.; Bonfond, B.; Clark, G.; Connerney, J. E. P.; Ebert, R. W.; Hue, V.; Giles, R. S.; Gladstone, G. R.; Greathouse, T.; Hospodarsky, G. B.; McComas, D. J.; **Saur, J.**, Sulaiman, A.H., Wilson R.J., A new framework to explain changes in Ios footprint tail electron fluxes, *J. Geophys. Res. Lett.*, doi.org/10.1029/2020GL089267, in press, 2020
3. Sulaiman, A.H., G. B. Hospodarsky, S. S. Elliott, W. S. Kurth, D. A. Gurnett, M. Imai, F. Allegrini, B. Bonfond, G. Clark, J. E. P. Connerney, R. W. Ebert, D. J. Gershman, V. Hue, S. Janser, S. Kotsiaros, C. Paranicas, O. Santolik, **J. Saur**, J. R. Szalay, S. J. Bolton, Waveparticle interactions associated with Ios auroral footprint: Evidence of Alfvén, ion cyclotron, and whistler modes, *J. Geophys. Res. Lett.*, doi.org/10.1029/2020GL088432, 2020
4. Soderlund K.M., Kalousova K., Buffo J. J., Glein C.R., Goodman, J.C. Mitri G., Patterson G., Postberg F., Rovira-Navarro M., Rueckriemen T., **Saur J.**, et al., Ice-ocean exchange processes in outer solar system satellites, *Space Sci. Rev.*, 216, 216:80, doi.org/10.1007/s11214-020-00706-6, 2020
5. Roth L., Boissier J., Moullet A., Sanchez-Monge A., de Kleere K., Yoneda M., Hikida R., Kita H., Tsuchiya F., Bloecker A., Gladstone R., Grodent D., Ivchenko N., Lellouch E., Retherford. K., **Saur J.**, et al., An attempt to detect transient changes in Io's SO<sub>2</sub> and NaCl atmosphere, *Icarus*, 350, doi.org/10.1016/j.icarus.2020.113925, 2020
6. Allegrini, F.; Mauk, B.; Clark, G.; Gladstone, G. R.; Hue, V.; Kurth, W. S.; Bagenal, F.; Bolton, S.; Bonfond, B.; Connerney, J. E. P.; Ebert, R. W.; Greathouse, T.; Imai, M.; Levin, S.; Louarn, P.; McComas, D. J.; **Saur J.**, et al., Energy flux and characteristic energy of electrons over Jupiter's main auroral emission *J. Geophys. Res. (Space Physics)*, doi.org/10.1029/2019JA027693, 2020
7. Giono G., Roth L., Ivchenko N., **Saur J.**, Retherford K., Schegel. S., et al., An analysis of the statistics and systematics of limb anomaly detections in HST/STIS transit images of Europa, *Astrophys. J.*, 159, doi.org/10.3847/1538-3881/ab7454, 2020
8. Szalay, J. R.; Allegrini, F.; Bagenal, F.; Bolton, S. J.; Bonfond, B.; Clark, G.; Connerney, J. E. P.; Ebert, R. W.; Gershman, D. J.; Giles, R. S.; Gladstone, G. R.; Greathouse, T.; Hospodarsky, G. B.; Imai, M.; Kurth, W. S.; Kotsiaros, S.; Louarn, P.; McComas, D. J.; **Saur, J.**, et al., Alfvénic Acceleration Sustains Ganymede's Footprint Tail Aurora, *J. Geophys. Res. Lett.*, 47, e2019GL086527, doi.org/10.1029/2019GL086527, 2020
9. Journaux, B., Kalousov, K.; Sotin, C.; Tobie, G.; Vance, S.; **Saur, J.**; Bollengier, O.; Noack, L.; Rueckriemen-Bez, T.; Van Hoolst, T.; Soderlund, K.; Brown, M Large Ocean Worlds with High-Pressure Ices, *Space Sci. Rev.*, 216: 7., doi.org/10.1007/s11214-019-0633-7, 2020
10. Taubner, R.; Olsson-Francis, K.; Vance, S.; Ramkissoon, N.; Postberg, F.; de Vera, J.; Antunes, A.; Camprubi Casas, E.; Sekine, Y.; Noack, L.; Barge, L.; Goodman, J.; Jebbar, M.; Journaux, B.; Karatekin, O.; Klenner, F.; Rabbow, E.; Rettberg, P.; Rueckriemen-Bez, T.; **Saur, J.**, et al. Experimental and Simulation Efforts in the Astrobiological Exploration of Exooceans, *Space Sci. Rev.*, 216: 9. <https://doi.org/10.1007/s11214-020-0635-5>, 2020

11. Szalay, J. R.; Bagenal, F.; Allegrini, F.; Bonfond, B.; Clark, G.; Connerney, J. E. P.; Crary, F.; Ebert, R. W.; Ergun, R. E.; Gershman, D. J.; Hinton, P. C.; Imai, M.; Janser, S.; McComas, D. J.; Paranicas, C.; **Saur, J.**, et al. Proton Acceleration by Io's Alfvénic Interaction, *J. Geophys. Res. (Space Physics)*, 125, doi:10.1029/2019JA027314R, 2020
12. Kotsiaros, S.; Connerney, J.; Clark, G.; Allegrini, F.; Gladstone, R.; Kurth, W.; Mauk, B.; **Saur, J.**, et al., Birkeland currents in Jupiter's magnetosphere observed by the polar orbiting Juno spacecraft, *Nature Astronomy*, 10.1038/s41550-019-0819-7, 2019
13. Hue V., Greathouse T.K., Bonfond B., **Saur J.**, Gladstone R., Roth L., et al., Juno-UVS Observation of the Io Footprint During Solar Eclipse, *J. Geophys. Res. (Space Physics)*, 124, 10.1029/2018JA026431 (2019)
14. Fischer C. and **J. Saur**, Time-variable electromagnetic star-planet interaction: The Trappist-1 system as an exemplary case, *Astrophys. J.*, doi:10.3847/1538-4357/aafaf2, 872:113 (17pp), 2019
15. **Saur J.**, S. Janser, A. Schreiner, G.C. Clark, B.H. Mauk, P. Kollmann, R.W. Ebert, F. Allegrini, J.R. Szalay, S. Kotsiaros, Wave-particle interaction of Alfvén waves in Jupiter's magnetosphere: Auroral and magnetospheric particle acceleration, *J. Geophys. Res. (Space Physics)*, doi: 10.1029/2018ja025948, 123, 9560, 2018
16. **Saur J.**, C. Fischer, A. Wennmacher, P.D. Feldman, L. Roth, D.F. Strobel, A. Reiners, The UV Spectrum of the Ultracool Dwarf LSR J1835+3259 Observed with the Hubble Space Telescope, *Astrophys. J.*, 859:74, 11pp, 2018
17. **Saur J.**, Electromagnetic Coupling in Star-Planet Systems, *Handbook of Exoplanets*, Springer, doi:10.1007/978-3-319-55333-7 27, id.27, 2018
18. **Saur J.**, E. Chané, O. Hartkorn, Modeling Magnetospheric Fields in the Jupiter System, *Magnetic Fields in the Solar System*, Springer, Edited by H. Lühr et al., vol. 448, pp. 153-182, 2018
19. Mura, A.; Adriani, A.; Connerney, J. E. P.; Bolton, S.; Altieri, F.; Bagenal, F.; Bonfond, B.; Dinelli, B. M.; Grard, J. -C.; Greathouse, T.; Grodent, D.; Levin, S.; Mauk, B.; Moriconi, M. L.; **J. Saur** et al., Juno observations of spot structures and a split tail in Io-induced aurorae on Jupiter, **Science**, 10.1126/science.aat1450, 361, 774, 2018
20. Blöcker, A., **J. Saur**, L. Roth, D.F. Strobel, MHD Modeling of the Plasma Interaction with Io's Asymmetric Atmosphere, *J. Geophys. Res. (Space Physics)*, DOI: 10.1002/2018JA025747, 123, 9286, 2018
21. Szalay, J. R.; Bonfond, B.; Allegrini, F.; Bagenal, F.; Bolton, S.; Clark, G.; Connerney, J. E. P.; Ebert, R. W.; Ergun, R. E.; Gladstone, G. R.; Grodent, D.; Hospodarsky, G. B.; Hue, V.; Kurth, W. S.; Kotsiaros, S.; Levin, S. M.; Louarn, P.; Mauk, B.; McComas, D. J.; **Saur, J.**, et al. In-Situ Observations Connected to the Io Footprint Tail Aurora, *J. Geophys. Res. (Planets)*, doi:10.1029/ 2018JE005752R, 2018
22. Bohm M., Winters A.R., Gassner G.J., Derigs D., Hindenlang F., **J. Saur**, An entropy stable nodal discontinuous Galerkin method for the resistive MHD equations. Part I: Theory and Numerical Verification, *J. Comp. Phys.*, in press

23. Clark G. et al., Precipitating Electron Energy Flux and Characteristic Energies in Jupiter's Main Auroral Region as Measured by Juno/JEDI, *Journal of Geophysical Research: Space Physics*, doi:10.1029/2018JA025639, 123, 75547567, 2018
24. Becker T.M., K.D. Retherford, L. Roth, A.R. Hendrix, M.A. McGrath, **J. Saur**, The Far-UV Albedo of Europa from HST Observations, *J. Geophys. Res.*, 122, doi:10.1029/2018JE005570, 2018
25. Grodent D., et al., Jupiter's Aurora Observed with HST during Juno Orbits 3 to 7 *J. Geophys. Res.* , doi.org/10.1002/2017JA025046, 2018
26. Plainaki C., et al., Towards a global unified model of Europas tenuous atmosphere. *Space Science Reviews*, 214(1), 40, doi:10.1007/s11214-018-0469-6, 2018
27. Chané E., **J. Saur**, J. Raeder J., F.M. Neubauer, K.M. Maynard, S. Poedts, The magnetosphere of the Earth under sub-Alfvénic solar wind conditions as observed on the 24th and 25th of May 2002, in *Down-Dusk-Asymmetries in Planetary Plasma Environments, AGU Monograph Series*, American Geophysical Union, 3-13, 2017
28. von Papen M., H. Dafsari, E. Florin, F. Gerrick, L. Timmermann, **J. Saur**, Phase-coherence classification: a new wavelet-based method to separate local field potentials into local (in)coherent and volume-conducted components, *J. Neuroscience Methods*, 291C, 198-212, DOI: 10.1016/j.jneumeth.2017.08.021, 2017
29. Hartkorn O. and **J. Saur**, Induction signals from Callisto's ionosphere and their implications on a possible subsurface ocean. *J. Geophys. Res.*, 122, doi:10.1002/2017JA024269, 2017
30. Ebert R.W. et al., Spatial Distribution and Properties of 0.1 - 100 keV Electrons in Jupiter's Polar Aurora Region, *Geophys. Res. Lett.*, 44, doi: 10.1002/2017GL075106, 2017
31. Clark G. et al., Energetic particle signatures of magnetic field-aligned potentials over Jupiter's polar regions, *Geophys. Res. Lett.*, 44, doi:10.1002/2017GL074366, 2017
32. B. Bonfond, **J. Saur**, D. Grodent, S.V. Badman, D. Bisikalo, V. Shematovhich, J.-C. Gérard, A. Radiotti, The tails of the satellite auroral footprints at Jupiter, *J. Geophys. Res.*, 122, doi:10.1002/2017JA024370, 2017
33. J. Alday, L. Roth, N. Ivchenko, K.D. Retherford, T.M. Becker, P. Molyneux, **J. Saur**, New constraints on Ganymede's hydrogen corona: Analysis of Lyman- $\alpha$  emissions observed by HST/STIS between 1998 and 2014 *Planet. Space Science*, 148, 35-44, doi:10.1016/j.pss.2017.10.006, 2017
34. F. Gerick, **J. Saur**, M. von Papen, The uncertainty of Local Background Magnetic Field Orientation in Anisotropic Plasma Turbulence, *Astrophys. J.*, 843, 5, doi:10.3847/1538-4357/aa767c, 2017
35. A. Schreiner and **J. Saur**, A Model for Dissipation of Solar Wind Magnetic Turbulence by Kinetic Alfvén Waves at Electron Scales: Comparison with Observations, *Astrophys. J.*, 835, 133, doi:10.3847/1538-4357/835/2/133, 2017

36. Roth L., **J. Saur**, K.D. Retherford, A. Blöcker, D.F. Strobel, P.D. Feldman, Constraints on Io's interior from auroral spot oscillations, *J. Geophys. Res.*, 122, 1903-1927, doi: 10.1002/2016JA023220, 2017
37. B. Bonfond, D. Grodent, S.V. Badman, **J. Saur**, J.-C. Gérard, A. Radiotti, Similarity of the Jovian satellite footprints: Spots multiplicity and dynamics, *Icarus*, 292, 208-217, 2017
38. E. Chané, **J. Saur**, R. Keppens, and S. Poedts, How is the Jovian Main Auroral Emission Affected by the Solar Wind?, *J. Geophys. Res. Space Physics*, 122, 1960-1978, doi:10.1002/2016JA023318, 2017
39. Musacchio F., **J. Saur**, L. Roth, K.D. Retherford, M.A. McGrath, P.D. Feldman, and D.F. Strobel, Morphology of Ganymede's FUV auroral ovals, *J. Geophys. Res.*, 122, 2855-2876, doi:10.1002/2016JA023220, 2017
40. Hartkorn O., **J. Saur**, D.F. Strobel, Structure and Density of Callistos Atmosphere from a Fluid-Kinetic Model of Its Ionosphere and Comparison with Hubble Space Telescope and Galileo Observations, *Icarus*, 282, 237-259, DOI: 10.1016/j.icarus.2016.09.020, 2017
41. Blöcker, A., **J. Saur**, L. Roth, Europa's Plasma Interaction with an Inhomogeneous Atmosphere: Development of Alfvén Winglets within the Alfvén wings, *J. Geophys. Res. (Space Physics)*, 121, 9794-9829, DOI: 10.1002/2016JA022479, 2016
42. von Papen M. and **J. Saur**, Longitudinal and local time asymmetry of magnetospheric turbulence in Saturn's plasma sheet, *J. Geophys. Res. (Space Physics)*, 121, DOI: 10.1002/2016JA022427, 2016
43. Roth L., **J. Saur**, K.D. Retherford, D.F. Strobel, P.D. Feldman, M.A. McGrath, J.R. Spencer, A. Bloecker, N. Ivchenko, Europa's far ultraviolet oxygen aurora from a comprehensive set of HST observations, *J. Geophys. Res. (Space Physics)*, 121, doi: 10.1002/2015JA022073, 2016
44. Roth L., N. Ivchenko, K.D. Retherford, N.J. Cunningham, P.D. Feldman, **J. Saur**, J.R. Spencer, D.F. Strobel, Constraints on an exosphere at Ceres from Hubble Space Telescope observations, *Geophys. Res. Lett.*, 43, doi:10.1002/2015GL067451, 2016
45. Chané E., Raeder J., **J. Saur**, Neubauer F.M., Maynard K.M., Poedts S., Simulations of the Earth's Magnetosphere Embedded in sub-Alfvénic Solar Wind on 24 and 25 May 2002, *J. Geophys. Res. (Space Physics)*, 120, doi:10.1002/2015JA021515, 2015
46. von Papen M., **J. Saur**, Forward Modeling of Reduced Power Spectra from Three-dimensional k-space, *Astr. Phys. J.*, 806, 11, 116, 2015
47. **Saur J.**, et al., The Search for a Subsurface Ocean in Ganymede with Hubble Space Telescope Observations of its Auroral Ovals *J. Geophys. Res.*, 120, 1715-1737, 2015
48. Roth L., K. D. Retherford, **J. Saur**, D. F. Strobel, P. D. Feldman, M. A. McGrath, F. Nimmo, Orbital apocenter is not a sufficient condition for HST/STIS detection of Europas water vapor aurora, *Proc. Nat. Acad. Sciences*, 111 (48) E5123-E5132, doi:10.1073/pnas.1416671111, 2014

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50. von Papen M., **J. Saur**, O. Alexandrova, Turbulent magnetic field fluctuations in Saturn's magnetosphere, *J. Geophys. Res. (Space Physics)*, 119, 2014
51. Duling, S., **J. Saur**, Wicht J., Consistent boundary conditions at nonconducting surfaces of planetary bodies: Applications in a new Ganymede MHD model, *J. Geophys. Res. (Space Physics)*, 119, 4412-4440, 2014
52. Kriegel, H., S. Simon, P. Meier, U. Motschmann, **J. Saur**, A. Wennmacher, D.F. Strobel, M.K. Dougherty, Ion densities and magnetic signatures of dust pickup at Enceladus, *J. Geophys. Res. (Space Physics)*, 119, 2740-2774, 2014
53. Simon, S., **J. Saur**, S. C. Treeck, H. Kriegel, M.K. Dougherty, Discontinuities in the magnetic field near Enceladus, *Geophys. Res. Lett.*, 41, 3359-3366, 2014
54. L. Roth, **J. Saur**, K. D. Retherford, P. D. Feldman, D. F. Strobel A phenomenological model of Io's UV aurora based on HST/STIS observations, *Icarus*, (228), 386-406, 2014
55. Plainaki, C., A. Milillo, A. Mura, **J. Saur**, S. Orsini, S. Massetti, Exospheric O<sub>2</sub> densities at Europa during different orbital phases, *Planet. Space Science*, 88, 42-52, 2013
56. Bonfond B., S. Hess, J.-C. Gérard, D. Grodent, A. Radioti, V. Chantry, **J. Saur**, S. Jacobsen, J.T. Clarke, Evolution of the Io footprint brightness I: Far-UV observations, *Planet. Space Science*, 88, 64-75, 2013
57. M. McGrath, X. Jia, K. Retherford, P.D. Feldman, D. F. Strobel, **J. Saur**, Aurora on Ganymede, *J. Geophys. Res. (Space Physics)*, 118(5), 2043-2054, 2013
58. Simon S., H. Kriegel, **J. Saur**, A. Wennmacher, Energetic aspects of Enceladus' magnetospheric interaction, *J. Geophys. Res. (Space Physics)*, 118(6), 3430-3445, 2013
59. **Saur J.**, T. Grambusch, S. Duling, F. M. Neubauer, S. Simon, Magnetic energy fluxes in sub-Alfvénic planet star and moon planet interactions, *Astron. Astrophys.*, 552, 20, 2013
60. Chané E., **J. Saur**, S. Poedts, Modeling Jupiter's magnetosphere: Influence of the internal sources, *J. Geophys. Res. (Space Physics)*, 118(5), 2157-2172, 2013
61. Simon S., S.C. Treeck, A. Wennmacher, **J. Saur**, F.M. Neubauer, C.L. Bertucci, M.K. Dougherty, Structure of Titan's induced magnetosphere under varying background, magnetic field conditions: Survey of Cassini magnetometer data from flybys TA-T85, *J. Geophys. Res. (Space Physics)*, 118(4), 1679-1699, 2013
62. Simon S., H. Kriegel, **J. Saur**, A. Wennmacher, F.M. Neubauer, E. Roussos, U. Motschmann, M.K. Dougherty, Analysis of Cassini magnetic field observations over the poles of Rhea, *J. Geophys. Res. (Space Physics)*, 117(A7), JA017747, 2012
63. Simon S., H. Kriegel, **J. Saur**, A. Wennmacher, F.M. Neubauer, E. Roussos, U. Motschmann, M.K. Dougherty, Analysis of Cassini magnetic field observations over the poles of Rhea, *J. Geophys. Res. (Space Physics)*, 117(A7), JA017747, 2012

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65. Christophe B., et al., OSS (Outer Solar System): a fundamental and planetary physics mission to Neptune, Triton and the Kuiper Belt, *Experimental Astronomy*, 34(2), 203-242, 2012
66. Arridge C.S., et al., Uranus Pathfinder: exploring the origins and evolution of Ice Giant planets. *Experimental Astronomy*, 33(2), 753-791 2012
67. Seufert M., **J. Saur** und F.M. Neubauer Multi-frequency electromagnetic sounding of the Galilean moons *Icarus*, 214(2), 477-494, 2011
68. **Saur J.**, D. Paul, L. Roth, F. Nimmo, D.F. Strobel, F. Darell, K.D. Retherford, M.A. McGrath, N. Schilling, J.-C. Grard, D. Grodent Hubble Space Telescope/Advanced Camera for Surveys Observations of Europa's Atmospheric Ultraviolet Emission at Eastern Elongation. *Astrophys. J.*, 738(2), 13pp., 2011
69. Kriegel H., S. Simon, U. Motschmann, **J. Saur**, F.M. Neubauer, A.M. Persoon, M.K. Dougherty, D.A. Gurnett, Influence of negatively charged plume grains on the structure of Enceladus' Alfvén wings: Hybrid simulations versus Cassini Magnetometer data. *J. Geophys. Res (Space Physics)*, 116(A10223), 2011
70. Roth L., **J. Saur**, K.D. Retherford, D.F. Strobel, J.R. Spencer Simulation of Io's auroral emission: Constraints on the atmosphere in eclipse. *Icarus*, 214(2):495-509, 2011
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## Recent Invited Talks

Colloquium Boston University, Boston, USA (2020) (postponed due to Corona), Colloquium University of New Hampshire, Durham, USA (2020) (postponed due to Corona), German Physical Society Spring Meeting, Bonn, Germany (2020 (canceled due to Corona), Magnetospheres of the Outer Planets Conference, Sendai, Japan (2019); Europlanet workshop, Outer planet

moon-magnetosphere interactions, Selfoss, Iceland (2019); Space Exploration of the Outer Solar System Icy Moons Oceans, ISSI, Bern Switzerland (2018), Magnetospheres of the Outer Planets Conference, Uppsala, Sweden (2017); Max Planck Insitute for Solar System Research, Göttingen, Germany (2017); ESTEC, Noordwijk, Netherlands (2016); THOR-Turbulence Meeting, Barcelona, Spain (2016); Chapman Conference, Duvrovnik, Croatia (2016); Free University Berlin (2016); KTH, Stockholm, Schweden (2016); Applied Physics Laboratory, Johns Hopkins University, Laurel, USA (2015); Forschungszentrum Jülich, Germany (2015); Academy of Sciences NRW, Düsseldorf, Germany (2015), European Space Weather Week, Oostende, Belgium (2015)

# Teaching and Supervision

## Supervision:

PhD: 10 finished, 3 ongoing, Master:  $\geq 22$ , Bachelor:  $\geq 30$ , Habilitation: 1, Postdoc: 5, several students co-supervised

## Classes:

1. 2020 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
2. 2020 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
3. 2020 Summer, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)
4. 2019 Winter, Welt im Computer, organized by Competence Area: Quantitative Modeling of Complex System, university wide lecture series
5. 2019 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
6. 2019 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
7. 2019 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
8. 2019 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
9. 2018 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
10. 2018 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
11. 2018 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
12. 2018 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
13. 2018 Summer, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)
14. 2017 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
15. 2017 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
16. 2017 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)

17. 2017 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
18. 2016 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
19. 2016 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
20. 2016 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
21. 2016 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
22. 2016 Summer, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)
23. 2015 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
24. 2015 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
25. 2014 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
26. 2014 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
27. 2014 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
28. 2014 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
29. 2013 Winter, Prognostic Modelling, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
30. 2013 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
31. 2012 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
32. 2013 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
33. 2013 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
34. 2012 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
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37. 2011 Winter, Prognostic Modelling, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
38. 2011 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
39. 2011 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
40. 2010 Winter, Geophysics of the Solar System, Master Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
41. 2010 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
42. 2010 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
43. 2009 Summer, Introduction to Geophysics (2 hours)
44. 2009 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
45. 2009 Winter, Prognostic Modelling, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
46. 2009 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
47. 2009 Summer, Time-Series Analysis, Diplom-Studiengang Geophysik (3 hours + hours exercises)
48. 2008 Winter, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)
49. 2008 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
50. 2008 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
51. 2008 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
52. 2007 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
53. Winter 2008, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
54. 2007 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)

55. 2007 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
56. 2006 Winter, Geophysics 3, Time-Series Analysis, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
57. 2006 Summer, Geophysics 2, Geophysical Fluid Dynamics, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
58. 2006 Summer, Introduction to Geophysics, Diplom Geophysik, (2 hours)
59. 2005 Winter, Geophysics 1, Geophysics of the Earth, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
60. 2003, Selected Topics in Space Physics, Lecture Series, Johns Hopkins University, (2 hours)