

Curriculum Vitae – Prof. 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, 6 x PI: PI in Cycle 16 (2008), Cycle 18 (2010), Cycle 20 (2012), Cycle 24 (2016), Cycle 27 (2019), Cycle 28 (2021), 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, Cycle 8
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

140 peer-reviewed publications, including 8 publications in Nature & Science, 2 in Nature Astronomy, and 8 Book and Review Chapters, H-Index: 37 (after Web of Science) and 45 (after Google Scholar)

Peer-Reviewed Publications & Book Chapters

2022

1. **Saur J.** et al., Alternating north-south brightness ratio of Ganymede's auroral ovals: Hubble Space Telescope observations around the Juno PJ34 flyby, *J. Geophys. Res. Lett.*, doi.org/10.1029/2022GL098600, 2022
2. Cervantes, S., **J. Saur**, Constraining Europa's subsolar atmosphere with a joint analysis of HST spectral images and Galileo magnetic field data, *J. Geophys. Res. (Space Physics)*, 10.1029/2022JA030472, 2022
3. Salveter A.P., **J. Saur**, Clark G., Mauk B.H., Jovian auroral electron precipitation budget - A Statistical Analysis of Diffuse, Mono-energetic, and Broadband Auroral electron distributions, *J. Geophys. Res. (Space Physics)*, 10.1029/2021JA030224, 2022
4. Fischer C. and **J. Saur**, Star-Planet Interaction: Wave Structures and Wing-Wing Interaction, *Astron. Astrophys.*, in press, <https://arxiv.org/abs/2207.14658>, 2022
5. Schlegel S., **J. Saur**, Alternating emission features in Ios footprint tail: Magnetohydrodynamical simulations of possible causes, *J. Geophys. Res. (Space Physics)*, 10.1029/2021JA030243, 2022
6. Allegrini F., F. Bagenal, R. W. Ebert, P. Louarn, D. J. McComas, J. R. Szalay, P. Valek, R. Wilson, S. J. Bolton, J. E. P. Connerney, G. Clark, S. Duling, W. S. Kurth, B. Mauk, **Saur**, J. H. Waite, Plasma observations during the June 7, 2021 Ganymede flyby from the Jovian Auroral Distributions Experiment (JADE) on Juno, *J. Geophys. Res. Lett.*, doi.org/10.1029/2022GL098682, 2022
7. W. S. Kurth, A. H. Sulaiman, G. B. Hospodarsky, J.D. Menietti B. H. Mauk, G. Clark, F. Allegrini, P. Valek, J. E. P. Connerney, J. H. Waite, S. J. Bolton, M. Imai, O. Santolik, W. Li, S. Duling, **J. Saur**, C. Louis, Juno Plasma Wave Observations at Ganymede, *J. Geophys. Res. Lett.*, doi.org/10.1029/2022GL098591, 2022
8. Marzok, A., Schlegel, S., **Saur, J.**, Roth, L., Grodent, D., Strobel, D. F., and Retherford, K. D., Mapping the brightness of Ganymede's ultraviolet aurora using Hubble Space Telescope observations *J. Geophys. Res. (Planets)*, 127, doi.org/10.1029/2022JE007256, 2022
9. Masatoshi Y., De Keyser J., Parks G., Oyama S., Wurz P., Abe T., Beth A., Daglis I.A., Dandouras I., Dunlop M., Henri P., Ivchenko N., Kallio E., Kucharek H., Liu Y.C.-M., Mann I., Marghitsu O., Nicolaou G., Rong Z., Sakanoi T., **Saur, J.**, Shimoyama M., Taguchi S., Tian F., Tsuda, T., Tsurutani, B., Turner D., Ulich T.; Yau A., Yoshikawa I.,

Plasma-neutral gas interactions in various space environments: Assessment beyond simplified approximations as a Voyage 2050 theme, *Experimental Astronomy*, doi:10.1007/s10686-022-09846-9, 2022

2021

10. **Saur J.**, Willmes C., Fischer C., Wennmacher A., Roth L., Youngblood A, Strobel D.F., Reiners A., Brown dwarfs as ideal candidates for detecting UV aurora outside the Solar System: Hubble Space Telescope observations of 2MASS J1237+6526, *Astron. Astrophysics*, 655, doi.org/10.1051/0004-6361/202040230, 2021
11. **Saur J.**, Turbulence in the Magnetospheres of the Outer Planets, *Frontiers in Astronomy and Space Sciences*, 8:624602. doi: 10.3389/fspas.2021.624602, 2021
12. **Saur J.**, Overview Moon-magnetosphere Interactions, *Space Physics and Aeronomy Collection Volume 2: Magnetospheres in the Solar System, Geophysical Monograph 259*, ed. R. Maggiolo, N. André, H. Hasegawa, D. Welling, American Geophysical Union. Published by John Wiley and Sons, Inc. DOI: 10.1002/9781119815624.ch36, 2021
13. Roth L., Ivchenko N., Gladstone G.R., **Saur J.** et al., A sublimated water atmosphere on Ganymede detected from Hubble Space Telescope observations, *Nature Astronomy*, DOI:10.1038/s41550-021-01426-9, 2021
14. Gaël et al., Enceladus as a potential oasis for life: Science goals and investigations for future explorations, *Experimental Astronomy*, doi:10.1007/s10686-021-09808-7, 2021
15. Sulaiman A.H. et al., Enceladus and Titan: emerging worlds of the Solar System, *Experimental Astronomy*, doi:10.1007/s10686-021-09810-z, 2021
16. Allegrini F., Kurth W.S., Elliott S.S., **Saur J.** et al., Electron partial density and temperature over Jupiters main auroral emission using Juno observations, *J. Geophys. Res. (Space Physics)*, doi.org/10.1029/2021JA029426, 2021
17. Verscharen, D. et al., A Case Study for Electron-Astrophysics, *Experimental Astronomy*, doi:10.1007/s10686-021-09761-5, 2021

2020

18. Clark, G.; Mauk, B. H.; Kollmann, P.; Szalay, J. R.; Sulaiman, A. H.; Gershman, D. J.; **Saur, J.**; Janser, S.; Garcia-Sage, K.; Greathouse, T.; Paranicas, C.; Allegrini, F.; Bagenal, F.; Bolton, S. J.; Connerney, J. E. P.; Ebert, R. W.; Hospodarsky, G.; Haggerty, D.; Hue, V.; Imai, M., et al., Energetic Proton Acceleration Associated With Io's Footprint Tail, *J. Geophys. Res. Lett.*, DOI: 10.1029/2020GL090839, 2020
19. Blanc, M. et al., Joint Europa Mission (JEM): a multi-scale study of Europa to characterize its habitability and search for extant life, Joint Europa Mission (JEM): a multi-scale study of Europa to characterize its habitability and search for extant life, *Planetary and Space Science*, Volume 193, 104960, DOI: 10.1016/j.pss.2020.104960, 2020
20. 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
21. 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
 22. Allegrini, F.; Gladstone, G. R.; Hue, V.; Clark, G.; Szalay, J. R.; Kurth, W. S.; Bagenal, F.; Bolton, S.; Connerney, J. E. P.; Ebert, R. W.; Greathouse, T. K.; Hospodarsky, G. B.; Imai, M.; Louarn, P.; Mauk, B. H.; McComas, D. J.; **Saur, J.**; Sulaiman, A. H.; Valek, P. W.; Wilson, R. J., First Report of Electron Measurements During a Europa Footprint Tail Crossing by Juno, 47, *J. Geophys. Res. (Space Physics)*, doi.org/10.1029/2020GL089732, 2020
 23. 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
 24. Roth L., Boissier J., Moullet A., Snchez-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 SO₂ and NaCl atmosphere, *Icarus*, 350, doi.org/10.1016/j.icarus.2020.113925, 2020
 25. 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
 26. 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
 27. 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
 28. 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
 29. 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

30. 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

2019

31. 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
32. 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)
33. 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

2018

34. **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
35. **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
36. **Saur J.**, Electromagnetic Coupling in Star-Planet Systems, *Handbook of Exoplanets*, Springer, doi:10.1007/978-3-319-55333-7_27, id.27, 2018
37. **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
38. 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
39. 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

40. 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
41. 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
42. 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
43. 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
44. 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
45. 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

2017

46. 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
47. 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
48. 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
49. 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
50. 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
51. B. Bonfond, **J. Saur**, D. Grodent, S.V. Badman, D. Bisikalo, V. Shematovich, J.-C. Gérard, A. Radiotti, The tails of the satellite auroral footprints at Jupiter, *J. Geophys. Res.*, 122, doi:10.1002/2017JA024370, 2017

52. 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- α emissions observed by HST/STIS between 1998 and 2014 *Planet. Space Science*, 148, 35-44, doi:10.1016/j.pss.2017.10.006, 2017
53. 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
54. 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
55. 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
56. 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
57. 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
58. 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
59. 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

2016

60. 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
61. 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
62. 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
63. 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

2015

64. 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
65. von Papen M., **J. Saur**, Forward Modeling of Reduced Power Spectra from Three-dimensional k-space, *Astr. Phys. J.*, 806, 11, 116, 2015
66. **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

2014

67. 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
68. Roth L.* , **J. Saur***, K. D. Retherford, D. F. Strobel, P. D. Feldman, M. A. McGrath, F. Nimmo, Transient water vapor at Europa's south pole, **Science**, 343(6167), 171-174, 2014 (*: equal contribution)
69. von Papen M., **J. Saur**, O. Alexandrova, Turbulent magnetic field fluctuations in Saturn's magnetosphere, *J. Geophys. Res. (Space Physics)*, 119, 2014
70. 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
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Recent Invited Talks

Magnetospheres of the Outer Planets Conference, Liège, Belgium, 2022, Colloquium University of Groningen, Netherlands, 2021, 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); Euro-planet 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 Institute for Solar System Research, Göttingen, Germany (2017); ESTEC, Noordwijk, Netherlands (2016); THOR-Turbulence Meeting, Barcelona, Spain (2016); Chapman Conference, Dubrovnik, Croatia (2016); Free University Berlin (2016); KTH, Stockholm, Sweden (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: 11 finished, 6 ongoing, Master: ≥ 30 , Bachelor: ≥ 30 , Habilitation: 1, Postdoc: 6, several students co-supervised

Classes:

1. 2021 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
2. 2021 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
3. 2021 Summer, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)
4. 2020 Winter, Welt im Computer, organized by Competence Area: Quantitative Modeling of Complex System, university wide lecture series
5. 2020 Winter, Geophysical Fluid Dynamics, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
6. 2020 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
7. 2020 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
8. 2020 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
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15. 2018 Winter, Geophysics of the Solar System, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
16. 2018 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)

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51. 2009 Winter, Prognostic Modelling, Master: Physics of the Earth and Atmosphere (2 hours, 2 hours exercises)
52. 2009 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
53. 2009 Summer, Time-Series Analysis, Diplom-Studiengang Geophysik (3 hours + hours exercises)
54. 2008 Winter, Literature Seminar, Bachelor: Geophysics and Meteorology (2 hours)

55. 2008 Winter, Geophysical Fluid Dynamics, Atmosphere, Ocean, Ionosphere, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
56. 2008 Summer, Space Physics, Master: Physics of the Earth and Atmosphere (3 hours, 2 hours exercises)
57. 2008 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
58. 2007 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
59. Winter 2008, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
60. 2007 Winter, Geophysics of the Earth, Bachelor: Geophysics and Meteorology, (3 hours, 2 hours exercises, 2 hours computer exercises)
61. 2007 Summer, Introduction to Geophysics, Bachelor: Geophysics and Meteorology (2 hours)
62. 2006 Winter, Geophysics 3, Time-Series Analysis, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
63. 2006 Summer, Geophysics 2, Geophysical Fluid Dynamics, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
64. 2006 Summer, Introduction to Geophysics, Diplom Geophysik, (2 hours)
65. 2005 Winter, Geophysics 1, Geophysics of the Earth, Hauptstudium, Diplom Geophysik, (3 hours + 2 hours exercises)
66. 2003, Selected Topics in Space Physics, Lecture Series, Johns Hopkins University, (2 hours)