



Lucile Turc

Curriculum Vitae

General Information

Full name: Lucile Françoise Turc
ORCID: 0000-0002-7576-3251
Nationality: French
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Education and degrees awarded

2014	Ph.D Space Plasma Physics <i>Thesis title: Interaction of magnetic clouds ejected by the Sun with the Earth's environment</i>	Ecole Polytechnique, Palaiseau, France
2011	M.Sc Physics & Applications, with a specialization in Astrophysics <i>Thesis title: Modelling of Ganymede's exosphere – Preparation of the JUICE mission</i>	University Pierre and Marie Curie, Paris, France

Current Position

09/2019 – 08/2024	Academy Research Fellow Project title: <i>Unfolding storm-time wave activity in near-Earth space.</i>	University of Helsinki, Helsinki, Finland
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Previous work experience

03/2019 – 08/2019	University Researcher Affiliated with the Finnish Centre of Excellence in Research of Sustainable Space.	University of Helsinki, Helsinki, Finland
03/2017 – 03/2019	Marie Skłodowska-Curie Fellow <i>The Foreshock and its Role in Solar-Terrestrial relations</i> funded by a Marie Skłodowska-Curie Individual Fellowship. Study of the role of the foreshock in solar wind-magnetosphere coupling using Vlasiator global numerical simulations and spacecraft observations.	University of Helsinki, Helsinki, Finland
11/2014–03/2017	ESA Research Fellow Multi-spacecraft study of the impact of magnetic clouds on the Earth's magnetosphere.	European Space Agency (ESA), Noordwijk, The Netherlands
10/2011–10/2014	PhD student - Case studies of magnetic clouds observed in the solar wind and the magnetosheath - Development of a semi-empirical model of the magnetosheath - Implementation of time-varying inputs in a hybrid model of a planetary magnetosphere	Laboratoire de Physique des Plasmas, Palaiseau, France
10/2011–10/2014	Teaching assistant Exercise assistant in mathematics and numerical physics and laboratory assistant in applied physics.	University Pierre and Marie Curie, Paris, France
03/2011 – 07/2011	Master's trainee Development of a test-particle model of Ganymede's exosphere.	Laboratoire Atmosphères, Milieux et Observations Spatiales, Paris, France
04/2010 – 07/2010	Trainee Case studies of magnetic clouds observed in the solar wind and the magnetosheath.	Laboratoire de Physique des Plasmas, Palaiseau, France

Research funding and grants

Fellowships

- Academy Research Fellowship from the Academy of Finland (September 2019 - August 2024), 438,874€

- Marie Skłodowska-Curie Fellowship (March 2017 - March 2019), 191,326€
- ESA Fellowship in Space Science (November 2014 - March 2017), funding equivalent of 120,000€

Research grants

- Academy of Finland funding for research costs (September 2022 - August 2024), 227,780€
- University of Helsinki three-year research grant (January 2020 - December 2022), 150,000€
- Academy of Finland funding for research costs (September 2019 - August 2022), 299,252€

Computing time and travel grants

- PI of the CSC Grand Challenge proposal KHALEESI: 35 millions billing units to run the Vlasiator simulation code on the Mahti supercomputer (2023)
- 1.5 million CPU-hours to run the Vlasiator simulation code on the Mahti supercomputer at CSC (2021)
- Co-PI of the CSC Grand Challenge proposal CROISSANTS (PI: Minna Palmroth): 12.5 million CPU-hours to run the Vlasiator simulation code (2016)
- ESTEC Faculty grants for research visits at ESTEC (4 visits in 2015-2016), about 6,000€ in total
- ESA student sponsorship (2013), 600€
- Travel grant from the Fondation de l'X (2012), 1,500€

Leadership and supervision experience

Supervision of post-doctoral researchers:

- Hongyang Zhou (2020-2023): development of time-varying inputs for the Vlasiator model and impact of solar wind fluctuations on near-Earth space
- Kun Zhang (since August 2020): foreshock waves and instabilities in Vlasiator (remote collaboration with UCLA)

Supervision of PhD students:

- Vertti Tarvus, University of Helsinki (2020-) [**primary supervisor**]
- Jonas Suni, University of Helsinki (2021-) [secondary supervisor]
- Harriet George, University of Helsinki (2019-2022) [secondary supervisor]
- Milla Kalliokoski, University of Helsinki (2019-2022) [secondary supervisor]

Supervision of MSc theses:

- Simo Lehtinen, University of Helsinki: *Effect of interplanetary shocks on geomagnetic pulsations in the Pc4 and Pc5 range* (2021) [**primary supervisor**]
- Jonas Suni, University of Helsinki: *Foreshock Compressive Structures as the Cause of Magnetosheath Jets* (2021) [secondary supervisor]
- Vertti Tarvus, University of Helsinki: *Statistical Properties of Cavitons and Spontaneous Hot Flow Anomalies in a Global Hybrid-Vlasov Magnetosphere Simulation* (2020) [**primary supervisor**]
- Dimitra Intzekara, Berlin University: *Using Solar Radiation Monitor Data for Space Weather Applications* (2018) [secondary supervisor]
- Aoife Ryan, University College Dublin: *Large-scale Vortices at the Earth's Magnetopause during Extreme Solar Events* (2016) [**primary supervisor**]
 → Aoife Ryan received the Peter Curran Award for the Best Poster at the Irish National Astronomy Meeting 2016 for her thesis' work.

Supervision of BSc theses:

- Julia Pukarinen (2022): Magnetic fluctuations in interplanetary coronal mass ejection-driven sheath regions

- Emilia Rintamäki (2022): Magnetopause location during extreme solar storms

Supervision of summer students:

- Mirja Ojuva, University of Helsinki: *Wave storms in near-Earth space* (2023) [primary supervisor]
- Julia Pukarinen, University of Helsinki: *Magnetic fluctuations in interplanetary coronal mass ejection-driven sheath regions* (2022 and 2023) [primary supervisor]
- Veera Lipsanen, University of Helsinki: *Towards a new ULF wave index with MLT dependence* (2023) [secondary supervisor]
- Vertti Tarvus, University of Helsinki: *Magnetosheath asymmetries in Vlasiator simulations* (2018) [primary supervisor]
- Dimitra Intzekara, ESA: *Mapping solar activity across the solar system* (2015) [secondary supervisor]

Leadership of research work:

- Leader of an international ISSI team (2018–2020): *Global study of the transmission of foreshock ULF waves in the magnetosheath and the magnetosphere* (12 members from 9 different institutes)

Positions of scientific expertise

- Member of the ISSI team 555 on the Impact of Upstream Mesoscale Transients on the Near-Earth Environment, led by P. Kajdic and X. Blanco-Cano (2023-)
- Guest Editor of the Research Topic on Sources and Propagation of Ultra-Low Frequency Waves in Planetary Magnetospheres for *Frontiers in Astronomy and Space Sciences* (2021–2022)
- Science Objective team leader for the FORESAIL-2 CubeSat mission (2019–)
- Member of the ESTEC Faculty Council (2015-2016)
- Reviewer for the ESA research fellow applications (2016)
- Judge for the Outstanding Student Poster competition at the EGU General Assembly (2016, 2018, 2019, 2022, 2023)
- Reviewer for scientific journals (*Journal of Geophysical Research*, *Geophysical Research Letters*, *Planetary and Space Science*, *Advances in Space Research*, *Annales Geophysicae*, and *Earth, Planets and Space*, *Frontiers in Astronomy and Space Sciences*)

Teaching experience

- Guest lecturer in the Plasma Physics course at the University of Helsinki (September 2019) for two lectures on magnetohydrodynamics
- Lecturer in the Advanced Plasma Physics course at the University of Helsinki (every other spring since 2018), responsible for the lectures on plasma instabilities.
- Teaching assistant at University Pierre and Marie Curie (2011-2014) responsible for
 - exercise sessions in Mathematics for 1st year bachelor students, 2 semesters (2x50hours) in 2012 and 2013, groups of 35 students
 - exercise sessions in Numerical Methods and Computer Science (in Unix, C and Fortran languages) for 1st year master students, 1 semester (42 hours), group of 20 students
 - laboratory work in an introduction to electronics for 3rd year bachelor students, 2 semesters (2x20hours) in 2012 and 2013, groups of 8 students.

Pedagogical Training

- 10 credits of pedagogical training at the University of Helsinki
 - UP1: Learning in higher education, spring 2020 (5 credits, grade: 5)
 - UP2.1: Constructive alignment in course design, autumn 2021 (5 credits, grade: 5)

- Metacognition applied to teaching, Ecole Normale Supérieure de Cachan, Cachan, France, 2 day training, May 2013
- Information and Communication Technologies applied to education, University Pierre and Marie Curie, Paris, France, 2 day training, Feb 2012
- Introduction to teaching physics, University Pierre and Marie Curie, Paris, and Ecole Normale Supérieure de Cachan, Cachan, France, 2 day training, Dec 2011

Institutional responsibilities

- Member of the steering committee of the PAPU Doctoral Programme, University of Helsinki, Finland (2022–)
- External expert in the steering group of the theoretical and computational methods master’s programme, University of Helsinki, Finland (2021–)
- Thesis committee member for three PhD students in the PAPU Doctoral Programme, University of Helsinki, Finland (2020–)
- Organiser of the Space Physics seminars at UH (2020–)
- Member of the organising committee of the Kumpula Physics Colloquium (2017–2023)
- Member of the Department of Physics well-being group (2017–2021)

Experience in organising scientific meetings

- Member of the Scientific Organizing Committee of the Heliophysics in Europe workshop (2023)
- Convener of a session on ULF waves at shocks at the AGU Annual Meeting (2021)
- Convener of sessions at the EGU General Assembly on the Earth’s magnetosheath (2016–2018), dayside processes (2019) and ULF waves (2020)
- Member of the Scientific Organizing Committee of the 4th Cluster-THEMIS Workshop (2016)

Awards and honours

- Outstanding contribution to the Cluster mission, ESA (2022)
- Academy of Finland Research Fellowship (2019)
- Hannu Koskinen award of the best presentation at Physics Days (2019)
- Ranked second for a tenure-track position at the University of Helsinki (2018)
- Marie Skłodowska-Curie Fellowship (2016)
- Invited Young Scientist at the ISSI Workshop on the Scientific Foundations of Space Weather (June 2016)
- ESA Research Fellowship in Space Science (success rate ~10%) (2014)

Other scientific or academic merits

- Member of the Young Academy Finland (2019-2023)
- Member of the Finnish Centre of Excellence in Research of Sustainable Space (since 2018)
- Member of the Vlasiator PI team (since 2017)

Outreach Activities and Communication

Public talks:

- Public talk on space weather and my research on foreshock waves in Tiedekulma (link to the video), February 2020, Helsinki, Finland
- Public talk on space weather in An afternoon in the Science Basement, November 2018, Helsinki, Finland

Participation in outreach events: (presenting and/or helping with the logistics)

- European Researchers' Night 2017 – Tiede - Tutkimus - Tarina Pecha Kucha event, Helsinki, Finland
- ESTEC Open Day 2016, Noordwijk, The Netherlands
- European Researchers' Night 2016 in Tähtitorninmäki, Helsinki, Finland
- Manning of the ESA's outreach booth at the EGU General Assemblies 2015 and 2016, Vienna, Austria
- European Researchers' Nights 2012 and 2013 at Ecole Polytechnique, Palaiseau, France
- Fête de la Science (Science Festival) 2011 and 2012 at Pierre and Marie Curie University, Paris, France

School visits:

- Munkkiniemen Yhteiskoulu, Helsinki, Finland, 2023
- Oulunkylän Yhteiskoulu, Helsinki, Finland, 2021
- Munkkiniemen Yhteiskoulu (virtual visits), Helsinki, Finland, 2020, 2021
- Helsingin Suomalainen Yhteiskoulu, Helsinki, Finland, 2019
- Les Garrigues primary school, Juvignac, France, 2018
- Participation in the "Skype a Scientist" program, 2019-2020

Media interaction:

- Interview for Yliopiston Lehti, the magazine of the University of Helsinki, for the "Tutkija suosittelee" ("A researcher recommends") section (in Finnish), 2021
- Media campaign around my work on the "Earth's magnetic song", presented in an ESA web story which was picked up in numerous media outlets all around the globe, 2019
- Participation in the Revontulien armoilla documentary by Simo Sipola, about space weather and the aurora, released in 2019
- Interview in the Horizon magazine about the FROST project, 2017
- AGU EOS Research Spotlight on April, 4 2017 about the results of one of my research papers.

Publications

1. Grandin, M., Luttikhuis, T., Battarbee, M., Cozzani, G., Zhou, H., **Turc, L.**, Pfau-Kempf, Y., George, H., Horaites, K., Gordeev, E., Ganse, U., Papadakis, K., Tesema, F., Suni, J., Dubart, M., Alho, A., Tarvus, V., Zaitsev, I., and Palmroth, M.: First 3D hybrid-Vlasov global simulation of auroral proton precipitation and comparison with satellite observations. *Journal of Space Weather and Space Climate*, 13, 20, doi:10.1051/swsc/2023017, 2023.
2. Palmroth, M., Pulkkinen, T.I., Ganse, U., Pfau-Kempf, Y., Koskela, T., Alho, M., Suni, J., Cozzani, G., Zaitsev, I., Grandin, M., **Turc, L.**, Battarbee, M., Johlander, A., Bussov, M., Dubart, M., George, H., Gordeev, E., Horaites, K., Papadakis, K., Tarvus, V., Zhou, H., and Nakamura, R., Magnetotail plasma eruptions driven by magnetic reconnection and kinetic instabilities, *Nature Geoscience*, 16, 570, doi:10.1038/s41561-023-01206-2, 2023.
3. Ganse, U, Koskela, T., Battarbee, M., Pfau-Kempf, Y., Papadakis, K., Alho, M., Bussov, M., Cozzani, G., Dubart, M., George, H., Gordeev, E., Grandin, M., Horaites, K., Suni, J., Tarvus, V., Tesema Kebede, F., **Turc, L.**, Zhou, H and Palmroth, M.: Enabling technology for global 3D + 3V hybrid-Vlasov simulations of near-Earth space, *Physics of Plasmas* 30, 042902, doi:10.1063/5.0134387, 2023.
4. Kalliokoski, M. M. H., Henderson, M. G., Morley, S. K., Kilpua, E. K. J., Osmane, A., Olifer, L., Turner, D. L., Jaynes, A. N., George, H., Hoilijoki, S., **Turc, L.**, Palmroth, M: Outer radiation belt flux and phase space density response to sheath regions: Van Allen Probes and GPS observations. *Journal of Geophysical Research: Space Physics*, 128, e2022JA030708, doi:10.1029/2022JA030708, 2023.
5. **Turc, L.**, Roberts, O.W., Verscharen, D., Dimmock, A.P., Kajdi, P., Palmroth, M., Pfau-Kempf, Y., Johlander, A., Dubart, M., Kilpua, E.K.J., Soucek, J., Takahashi, K., Takahashi, N., Battarbee, M., Ganse, U.: Transmission of foreshock waves through Earth's bow shock, *Nat. Phys.*, doi:10.1038/s41567-022-01837-z, 2023.

- Newsarticle on the UH website
 - Commentary on the paper accompanying its publication
 - ISSI Spotlight
 - "Behind-the-paper" blog post on Nature Portfolio
6. Papadakis, K., Pfau-Kempf, Y., Ganse, U., Battarbee, M., Alho, M., Grandin, M., Dubart, M., **Turc, L.**, Zhou, H., Horaites, K., Zaitsev, I., Cozzani, G., Bussov, M., Gordeev, E., Tesema, F., George, H., Suni, J., Tarvus, V., and Palmroth, M.: Spatial filtering in a 6D hybrid-Vlasov scheme to alleviate adaptive mesh refinement artifacts: a case study with Vlasiator (versions 5.0, 5.1, and 5.2.1), *Geosci. Model Dev.*, 15, 7903–7912, doi:10.5194/gmd-15-7903-2022, 2022.
 7. Wellbrock, A., Jones, G. H., Dresing, N., Coates, A. J., Simon Wedlund, C., Nilsson, H., Sanchez-Cano, B., Palmerio, E., **Turc, L.**, Myllys, M., Henri, P., Goetz, C., Witasse, O., Nordheim, T. A., and Mandt, K.: Observations of a solar energetic particle event from inside and outside the coma of comet 67P. *Journal of Geophysical Research: Space Physics*, 127, e2022JA030398, doi:10.1029/2022JA030398, 2022.
 8. **Turc, L.**, Zhou, H., Tarvus, V., Ala-Lahti, M., Battarbee, M., Pfau-Kempf, Y., Johlander, A., Ganse, U., Dubart, M., George, H., Grandin, M., Horaites, K., Tesema, F., Suni, J., Alho, M., Papadakis, K., and Palmroth, M.: A global view of Pc3 wave activity in near-Earth space: Results from hybrid-Vlasov simulations. *Front. Astron. Space Sci.* 9:989369, doi:10.3389/fspas.2022.989369/full, 2022.
 9. Dubart, M., Battarbee, M., Ganse, U., Osmane, A., Spanier, F., Suni, J., Johlander, A., Alho, M., Bussov, M., Cozzani, G., George, H., Grandin, M., Horaites, K., Papadakis, K., Pfau-Kempf, Y., Tarvus, V., **Turc, L.**, Zaitsev, I., Zhou, H., and Palmroth, M.: Sub-grid modeling of pitch-angle diffusion for ion-scale waves in hybrid-Vlasov simulations with Cartesian velocity space, *Physics of Plasmas* 29, 103902, doi:10.1063/5.0096361, 2022.
 10. Zhou, H., **Turc, L.**, Pfau-Kempf, Y., Battarbee, M., Tarvus, V., Dubart, M., George, H., Cozzani, G., Grandin, M., Ganse, U., Alho, M., Johlander, A., Suni, J., Bussov, M., Papadakis, K., Horaites, K., Zaitsev, I., Tesema, F., Gordeev, E. and Palmroth, M.: Magnetospheric responses to solar wind Pc5 density fluctuations: Results from 2D hybrid Vlasov simulation, *Front. Astron. Space Sci.* 9:984918, doi:10.3389/fspas.2022.984918, 2022.
 11. Alho, M., Battarbee, M., Pfau-Kempf, Y., Khotyaintsev, Yu. V., Nakamura, R., Cozzani, G., Ganse, U., **Turc, L.** et al.: Electron signatures of reconnection in a global eVlasiator simulation. *Geophysical Research Letters*, 49, e2022GL098329, doi:10.1029/2022GL098329, 2022.
 12. George, H., Osmane, A., Kilpua, E. K. J., Lejosne, S., **Turc, L.**, Grandin, M., Kalliokoski, M. M. H., Hoilijoki, S., Ganse, U., Alho, M., Battarbee, M., Bussov, M., Dubart, M., Johlander, A., Manglayev, T., Papadakis, K., Pfau-Kempf, Y., Suni, J., Tarvus, V., Zhou, H., and Palmroth, M.: Estimating inner magnetospheric radial diffusion using a hybrid-Vlasov simulation. *Frontiers in Astronomy and Space Sciences*, 9, doi:10.3389/fspas.2022.866455, 2022.
 13. Kalliokoski, M. M. H., Kilpua, E. K. J., Osmane, A., Jaynes, A. N., Turner, D. L., George, H., **Turc, L.**, and Palmroth, M.: Phase space density analysis of outer radiation belt electron energization and loss during geoeffective and nongeoeffective sheath regions. *Journal of Geophysical Research: Space Physics*, 127, e2021JA029662, doi:10.1029/2021JA029662, 2022.
 14. Johlander, A., Battarbee, M., **Turc, L.**, Ganse, U., Pfau-Kempf, Y., Grandin, M., et al.: Quasi-parallel shock reformation seen by Magnetospheric Multiscale and ion-kinetic simulations. *Geophysical Research Letters*, 49, doi:10.1029/2021GL096335, 2022.
 15. Ala-Lahti, M., Dimmock, A. P., Pulkkinen, T. I., Good, S. W., Yordanova, E., **Turc, L.**, & Kilpua, E. K. J.: Transmission of an ICME sheath into the Earth's magnetosheath and the occurrence of traveling foreshocks. *Journal of Geophysical Research: Space Physics*, 126, e2021JA029896. doi:10.1029/2021JA02989, 2021.
 16. Kajdic, P., Pfau-Kempf, Y., **Turc, L.**, Dimmock, A. P., Palmroth, M., Takahashi, K., E. Kilpua, E.K.J., Soucek, J., Takahashi, N., Preisser, L., Blanco-Cano, X., Trotta, D., and Burgess, D.: ULF wave transmission across collisionless shocks: 2.5D local hybrid simulations. *Journal of Geophysical Research: Space Physics*, 126, doi:10.1029/2021JA029283, 2021.
 17. Suni, J., Palmroth, M., **Turc, L.**, Battarbee, M., Johlander, A., Tarvus, V., Alho, M., Bussov, M., Dubart, M., Ganse, U., Grandin, M., Horaites, K., Manglayev, T., Papadakis, K., Pfau-Kempf, Y., and Zhou, H.: Connection between

- foreshock structures and the generation of magnetosheath jets: Vlasiator results. *Geophysical Research Letters*, 48, doi:10.1029/2021GL095655, 2021.
18. Tarvus, V., **Turc, L.**, Battarbee, M., Suni, J., Blanco-Cano, X., Ganse, U., Pfau-Kempf, Y., Alho, M., Dubart, M., Grandin, M., Johlander, A., Papadakis, K., and Palmroth, M.: Foreshock cavitons and spontaneous hot flow anomalies: A statistical study with a global hybrid-Vlasov simulation, *Ann. Geophys.*, 39, 911-928, doi:10.5194/angeo-39-911-2021, 2021.
 19. Runov, A., Grandin, M., Palmroth, M., Battarbee, M., Ganse, U., Hietala, H., Hoilijoki, S., Kilpua, E., Pfau-Kempf, Y., Toledo-Redondo, S., **Turc, L.**, and Turner, D.: Ion distribution functions in magnetotail reconnection: Global hybrid-Vlasov simulation results, *Ann. Geophys.*, 39, 599-612, doi:10.5194/angeo-39-599-2021, 2021.
 20. Johlander, A., Battarbee, M., Vaivads, A., **Turc, L.**, Pfau-Kempf, Y., Ganse, U., Grandin, M., Dubart, M., Khotyaintsev, Yu. V., Caprioli, D., Haggerty, C., Schwartz, S. J., Giles, B. L., and Palmroth, M.: Ion Acceleration Efficiency at the Earth's Bow Shock: Observations and Simulation Results, *ApJ*, 914, 2, 82, doi:10.3847/1538-4357/abfafc, 2021.
 21. Myllys, M., Henri, P., Vallières, X., Gilet, N., Nilsson, H., Palmerio E., **Turc, L.**, Wellbrock, A., Goldstein, R., and Witasse, O.: Electric field measurements at the plasma frequency around comet 67P by RPC-MIP onboard Rosetta, *A&A*, 652, A73, doi:10.1051/0004-6361/201936633, 2021.
 22. Palmroth, M., Raptis, S., Suni, J., Karlsson, T., **Turc, L.**, Johlander, A., Ganse, U., Pfau-Kempf, Y., Blanco-Cano, X., Akhavan-Tafti, M., Battarbee, M., Dubart, M., Grandin, M., Tarvus, V., and Osmane, A.: Magnetosheath jet evolution as a function of lifetime: Global hybrid-Vlasov simulations compared to MMS observations, *Ann. Geophys.*, 39, 289-308, doi:10.5194/angeo-39-289-2021, 2021.
 23. Palmerio, E., Kilpua, E. K. J., Witasse, O., Barnes, D., Sánchez Cano, B., Weiss, A. J., Nieves-Chinchilla, T., Möstl, C., Jian, L.K., Mierla, M., Zhukov, A.N., Guo, J., Rodriguez, L., Lowrance, P.J., Isavnin, A., **Turc, L.**, Futaana, Y. and Holmström, M: CME Magnetic Structure and IMF Preconditioning Affecting SEP Transport. *Space Weather*, 19, e2020SW002654. doi:10.1029/2020SW002654, 2021.
 24. Takahashi, K., **Turc, L.**, Kilpua, E., Takahashi, N., Dimmock, A., Kajdic, P., Palmroth, M., Pfau-Kempf, Y., Soucek, J., Motoba, T., Hartinger, M.D., Artemyev, A., Ganse, U. and Battarbee, M.: Propagation of ultralow frequency waves from the ion foreshock into the magnetosphere during the passage of a magnetic cloud. *Journal of Geophysical Research: Space Physics*, 126, e2020JA028474, doi:10.1029/2020JA028474, 2021.
 25. Battarbee, M., Brito, T., Alho, M., Pfau-Kempf, Y., Grandin, M., Ganse, U., Papadakis, K., Johlander, A., **Turc, L.**, Dubart, M., and Palmroth, M.: Vlasov simulation of electrons in the context of hybrid global models: A Vlasiator approach, *Ann. Geophys.*, 39, 85-103, doi:10.5194/angeo-39-85-2021, 2021.
 26. Dubart, M., Ganse, U., Osmane, A., Johlander, A., Battarbee, M., Grandin, M., Pfau-Kempf, Y., **Turc, L.**, and Palmroth, M.: Resolution dependence of magnetosheath waves in global hybrid-Vlasov simulations, *Ann. Geophys.*, 38, 1283-1298, doi:10.5194/angeo-38-1283-2020, 2020
 27. **Turc, L.**, Tarvus, V., Dimmock, A.P., Battarbee, M., Ganse, U., Johlander, A., Grandin, M., Pfau-Kempf, Y., Dubart, M. and Palmroth, M.: Asymmetries in the Earth's dayside magnetosheath: results from global hybrid-Vlasov simulations, *Ann. Geophys. Discuss.*, doi:10.5194/angeo-38-1045-2020, 38, 1045-1062, 2020
 28. Grandin, M., **Turc, L.**, Battarbee, M., Ganse, U., Johlander, A., Pfau-Kempf, Y., Dubart, M. and Palmroth, M.: Hybrid-Vlasov simulation of auroral proton precipitation in the cusps: Comparison of northward and southward interplanetary magnetic field driving, *Journal of Space Weather and Space Climate*, 10, 51, <https://doi.org/10.1051/swsc/2020053>, 2020
 29. Pfau-Kempf, Y., Palmroth, M., Johlander, A., **Turc, L.**, Alho, M., Battarbee, M., Dubart, M., Grandin, M., and Ganse, U.: Hybrid-Vlasov modeling of three-dimensional dayside magnetopause reconnection, *Physics of Plasmas*, 27, doi:10.1063/5.0020685, 2020
 30. Battarbee, M., Blanco-Cano, X., **Turc, L.**, Kajdi, P., Johlander, A., Tarvus, V., Fuselier, S., Trattner, K., Alho, M., Brito, T., Ganse, U., Pfau-Kempf, Y., Akhavan-Tafti, M., Karlsson, T., Raptis, S., Dubart, M., Grandin, M., Suni, J., and Palmroth, M.: Helium in the Earth's foreshock: a global Vlasiator survey, *Ann. Geophys.*, 38, 1081-1099, doi:10.5194/angeo-38-1081-2020, 2020
 31. Battarbee, M., Ganse, U., Pfau-Kempf, Y., **Turc, L.**, Brito, T., Grandin, M., Koskela, T., and Palmroth, M.: Non-locality of the Earth's quasi-parallel bow shock: injection of thermal protons in a hybrid-Vlasov simulation,

Ann. Geophys., 38, 625-643, <https://doi.org/10.5194/angeo-38-625-2020>, 2020

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Invited presentations

1. **Turc, L.**: Foreshock processes and their impact on the downstream regions, invited oral presentation at the IUGG General Assembly, Berlin, Germany, 11-20 July 2023.
2. **Turc, L.**, Roberts, O.W., Verscharen, D., Dimmock, A.P., Kajdi, P., Palmroth, M., Pfau-Kempf, Y., Johlander, A., Dubart, M., Kilpua, E.K.J., Soucek, J., Takahashi, K., Takahashi, N., Battarbee, M., Ganse, U.: Transmission of foreshock waves through Earth's bow shock, invited presentation at the EGU general assembly, Vienna, Austria, 23-28 Apr 2023.
3. **Turc, L.**: Interplanetary coronal mass ejections and their impact on near-Earth space: insights from the Cluster mission, invited presentation at the Cluster 22nd anniversary symposium, Darmstadt, Germany, 7-11 Nov 2022.
4. **Turc, L.**, Roberts, O.W., Archer, M.O., Palmroth, M., Battarbee, M., Brito, T., Ganse, U., Grandin, M., Pfau-Kempf, Y., Escoubet, C.P., and Dandouras, I.: Observations and simulations of foreshock waves during magnetic clouds, EGU General Assembly, Online event, 3-8 May 2020
5. **Turc, L.**, Roberts, O.W., Archer, M.O., Palmroth, M., Battarbee, M., Brito, T., Ganse, U., Grandin, M., Pfau-Kempf, Y., Escoubet, C.P., and Dandouras, I.: Foreshock waves during magnetic cloud events: Cluster's observations and numerical simulations, 29th Cluster Workshop, Lanzarote, Canary Islands, Spain, 7-11 October 2019
6. **Turc, L.**, M. Palmroth, A. Dimmock, P. Kajdic, E. Kilpua, I. Mann, Y. Pfau-Kempf, T. Sarris, J. Soucek, K. Takahashi, N. Takahashi, D. Turner, Foreshock ULF Waves: Transmission into the Magnetosheath and Magnetosphere, and Effects of Solar Transients, International Union of Geodesy and Geophysics Assembly, Montreal, Canada, 8-18 July 2019
7. **Turc, L.**, Palmroth, M., and the Vlasiator team, Investigating kinetic processes in near-Earth space with the Vlasiator global simulation, Annual Meeting of the French Astronomical and Astrophysical Society, Nice, France, 14-17 May 2019
8. **Turc, L.**, M. Palmroth, M. Battarbee, T. Brito, U. Ganse, M. Grandin, L. Juusola, and Y. Pfau-Kempf, New avenues towards a global understanding of the Earth's magnetosphere, Solar Wind 15 Conference, Brussels, Belgium, 18-22 June 2018
9. **Turc, L.**, M. Palmroth and the Vlasiator team, From ion scales to large scales: recent results of Vlasiator's global simulations of the Earth's magnetosphere, invited seminar at Imperial College London, London, UK, 24 May 2018
10. **Turc, L.**, U. Ganse, Y. Pfau-Kempf, M. Battarbee, S. Hoilijoki, R. Jarvinen, L. Juusola, S. von Althaus, T. Brito, M. Grandin, and M. Palmroth, Investigating the role of the foreshock in solar wind-magnetosphere coupling, EGU General Assembly 2018, Vienna, Austria, 8-13 April 2018
11. **Turc, L.**, M. Palmroth, Y. Pfau-Kempf, U. Ganse, S. Hoilijoki, L. Juusola, R. Jarvinen, Influence of the Alfvén Mach number on the properties of the Earth's foreshock, 27th Cluster Workshop, Bled, Slovenia, 11-15 September 2017
12. **Turc, L.**, C.P. Escoubet, D. Fontaine and E.K.J. Kilpua, Interaction of magnetic clouds with the Earth's bow shock, [Invited Young Scientist](#) at the ISSI Workshop on the Scientific Foundations of Space Weather, Bern, Switzerland, 27 June - 1 July 2016
13. **Turc, L.**, Solar wind-magnetospheric coupling during magnetic storms, Annual Meeting of the French Astronomical and Astrophysical Society, Lyon, France, 14-17 June 2016
14. **Turc, L.**, D. Fontaine, E.K.J. Kilpua and P. Savoini, Interaction of magnetic clouds with the Earth's magnetosphere, European Week of Astronomy and Space Sciences, Turku, Finland, 8-12 July 2013