

Savvas Raptis

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1.1. Professional Experience

- **Senior Research Scientist**, Johns Hopkins University - Applied Physics Laboratory (JHU/APL), Laurel, MD, USA (Since Mar 2026)
- **Postdoctoral Researcher**, Johns Hopkins University – Applied Physics Laboratory, Laurel, MD, USA (Jun 2023 – Feb 2026)
- **Visiting Researcher**, European Space Agency (ESA) - ESTEC, Leiden, Netherlands (Jan 2023 – Apr 2023)
- **Postdoctoral Researcher**, KTH Royal Institute of Technology, Stockholm, Sweden (Nov 2022 – May 2023)
- **PhD Researcher**, KTH Royal Institute of Technology, Stockholm, Sweden (Oct 2018 – Nov 2022)

1.2. Education

- **PhD in Electrical Engineering (Space and Plasma Physics)**, KTH Royal Institute of Technology, Sweden (2022)
- **MSc in Astronomy and Astrophysics**, KU Leuven, Belgium (2018)
- **BSc in Physics**, National and Kapodistrian University of Athens, Greece (2016)

1.3. Research Experience

My research spans heliophysics, astrophysics, and plasma physics, focusing on collisionless shock dynamics, particle acceleration, space weather, and transient processes such as magnetosheath jets and foreshock transients at Earth and other planetary environments. My expertise includes multi-spacecraft data analysis, kinetic plasma physics, statistical modeling, and ML/AI applications. I currently develop data-driven models for space weather applications and investigate particle energization across planetary and astrophysical systems.

1.4. Leadership and Relevant Community Service

- **AGU Leadership:**
 - **Chair (2024–present) and Member (2022–2024)**, SPA Early Career Leadership Advisory Committee (EC-LAC)
- **GEM Leadership:**
 - **Focus Group Leader**, NSF Geospace Environment Modelling (GEM) for "Multiscale Dayside Transients" (MDT), 2025–2029.
- **Convening and Chairing:**
 - **Primary Convener and Chair**, AGU sessions on collisionless shocks and dayside transients (2023–2026); EGU sessions (2022–2024)
 - **Lead Organiser**, "LMAG25" Workshop on Machine Learning and Data Science in Geospace, JHU/APL, 2025. <https://www.lmag25.com>
- **Mentorship:**

- **Judge**, student presentations: AGU OSPA (2024), EGU OSPP (2025), GEM posters (2024–2026)
 - **Mentor**, AGU First-time Presenters Feedback Program (2025); GEM workshop mentoring program (2025–2026); JHU CIRCUIT summer internship program (2025).
- **AGU Journal Reviewer:**
 - Active reviewer for AGU Advances, GRL, JGR: Space Physics, JGR: Machine Learning and Computation, Earth and Space Science, and Radio Science

1.5. Mission and Science Teams

Mission/Organization	Role
IMAP (NASA)	Member of Science Team
MMS (NASA)	Member of Science Working Team; EPD Instrument Team
SMILE (ESA/CAS)	Member of Science Working Team and Modelling Working Group
Plasma Observatory (ESA)	Contributor to Science Multi-point Working Group and member of Science Consortium
Center for Geospace Storms (CGS) – NASA’s Drive Center	Working Group Lead, Magnetosphere Data Analysis

1.6. Recent Selected Publications

- **Raptis, S.**, Turner, D. L., Caprioli, D., et al. (2026). Relativistic electron acceleration at the bow shock of Jupiter and beyond. *Nature*, 654, 47–51.
- **Raptis, S.**, Ahmad, L., Lindberg, M., et al. (2025). Revealing an unexpectedly low electron injection threshold via reinforced shock acceleration. *Nature Communications*, 16(1).
- **Raptis, S.**, Lindberg, M., Liu, T.Z., et al. (2025). Multimission observations of relativistic electrons and high-speed jets linked to shock-generated transients. *The Astrophysical Journal Letters*, 981(1).
- **Raptis, S.**, Merkin, V., Ohtani, S., et al. (2024). Plasma sheet magnetic flux transport during geomagnetic storms. *Geophysical Research Letters*, 51(18).
- **Raptis, S.**, Karlsson, T., Vaivads, A., et al. (2022). Downstream high-speed plasma jet generation as a direct consequence of shock reformation. *Nature Communications*, 13(1).

1.7. Distinctions and Awards

- **Springer Nature 2022 Astronomy Highlight:** breakthrough research in shock reformation.
- **ESA Cluster Mission Outstanding Contribution Award (2023):** service to mission operations and data analysis.
- **ISSI International Team Early Career Researcher:** Selected for Teams 465, 555, and 677 (2019–2028).