



## Report from the EPS Plasma Physics Division Board, Summer 2026

### Board meetings

The Board met in-person twice in 2025, on July 6 in Vilnius (Lithuania) and on December 3-4 in Prague (Czechia).

### Operation & Development of the Division

Kristel Crombé (ERM/KMS and Ghent University, Belgium) continues as Chair (2022-2027) of the Division, and Ken McClements (UKAEA, UK) continues as Secretary (2022 – 2029). The Board members coordinating the 2025 EPS-PPD Prizes were: Alfvén, Andreas Dinklage (Max-Planck-Institut für Plasmaphysik, Greifswald, Germany); Innovation, Eva Kovačević (Orléans University, France); Sylvie Jacquemot Early Career Prize, Mervi Mantsinen (Barcelona Supercomputing Centre, Spain); and the PhD Research Award, Monica Spolaore (CNR, Padua, Italy).

The mandates of 10 Board members ended in the summer of 2025: David Burgess, Andrea Ciardi, Andreas Dinklage, Basil Duval, Eva Kovačević, Thomas Mussenbrock, Carlos Silva, Jörg Stober, Vladimir Tikhonchuk and Stefan Weber. The division is grateful for their many contributions. The new members of the Board are as follows: Agata Chomiczewska (Institute of Plasma Physics & Laser Microfusion, Poland), Corinne Champeaux (Université de Limoges, France), Fabrizio Consoli (ENEA, Italy), Andrew Gibson (University of York, UK), Daniela Grasso (Politecnico di Torino, Italy), Costanza Maggi (UKAEA, UK), Daniele Margarone (ELI Beamlines, Czechia) and Emanuele Poli (IPP Garching, Germany). Following the departure from the Board of Andreas Dinklage, Eva Kovačević and Vladimir Tikhonchuk, it has been agreed that Brian Reville, Hana Barankova and Costanza Maggi will coordinate, respectively, the Alfvén, Innovation and Landau-Spitzer prizes. For full details of the new Board, see [Board | European Physical Society – Plasma Physics Division](#).

### Vilnius EPS Plasma Physics Conference 2025 ([Home - 51st EPS Conference on Plasma Physics](#))

The 51<sup>st</sup> annual EPS Plasma Physics Conference took place at the Radisson Blu Hotel Lietuva in Vilnius, Lithuania from July 7-11 2025, hosted by Vilnius University. The Local Organising Committee (LOC) was chaired by Jelena Tamulienė (Vilnius University). The Programme Committee was chaired by Marija Vranic (Instituto Superior Tecnico, Portugal) and comprised:

- MCF: A. Alonso (ES – sub-chair), M. Bécoulet (FR), A. Köhn-Seemann (DE), Y. Kovtun (UA), E. Militello-Asp (UK), M. Nocente (IT), J. Proll (NL), H. Reimerdes (CH), F. Reimold (DE), P. Schneider (DE), A. Snicker (FI), D. Terranova (IT)
- BPIF: J. Santos (FR – sub-chair), J.A. Perez-Hernandez (ES), M. Cipriani (IT), T. Dornheim (DE), M. Formanek (CZ), E. Hume (UK), M. Lafon (FR), G. Williams (PT)
- BSAP: E. Tubman (US – sub-chair), M. Padovani (IT), I. Mann (NO), Á. Sánchez-Monge (ES), A. Vanthieghem (FR)
- LTDP: J. Walsh (UK – sub-chair), C. Knapek (DE), H. Kondo (JP), F. Krcma (CZ)

Proposals from the plasma research community for invited and plenary speakers were received through an open forum, from the American Physical Society and from the Association of Asia Pacific Physical Societies, which kindly contributed representatives to participate in Programme Committee and EPS-PPD Board meetings in December 2024. There were 499 paying delegates and the financial outturn was positive. The LOC organised the submission of 4-page papers linked to contributed orals and posters. PPD Board Member Basil Duval assisted the LOC in bringing these papers to publication: they are available online at [51<sup>st</sup> EPS Conference on Plasma Physics - 8 - 12 July 2024 \(epfl.ch\)](#) and constitute volume 51A of the Europhysics Conference Abstracts series.

Many of the plenary and invited talks led to refereed journal articles published in a special issue of *Plasma Physics and Controlled Fusion*, available online at [Special Issue Featuring the Invited Talks from the 51<sup>st</sup> EPS Conference on Plasma Physics, 7-11 July 2025 - IOPscience](#).

## **Edinburgh EPS Plasma Physics Conference 2026** ([Home – 52<sup>nd</sup> EPS Conference on Plasma Physics](#))

The 52<sup>nd</sup> annual EPS Plasma Physics Conference will take place in Edinburgh, UK, from June 29 - July 3 2026, hosted by UKAEA. The Local Organising Committee is chaired by Fulvio Militello (UKAEA). The programme Committee is chaired by Fernanda Rimini (UKAEA) and comprises:

- MCF: R. Lorenzini (IT – sub-chair), A. Kirk (UK), L. Gil (PT), J. Garcia-Regaña (ES), S. Newton (UK), Á. Cappa (ES), L. Aho-Mantila (FI), M. Schneider (ITER), M. Dunne (DE), A. Könies (DE), Z. Zarzoso (FR), P. Bilkova (CZ)
- BPIF: A. Maffini (IT – sub-chair), A. Benuzzi (FR), D. Blackman (CZ), R. Gonzalez (ES), L. Masse (FR), J. Pasley (UK), M. Zepf (DE)
- BSAP: F. Delahaye (FR – sub-chair), F. Rieger (DE), J. Stawarz (UK), J. Nattila (FI)
- LTDP: D. Eremin (DE – sub-chair), S. Jaiswal (IN), A. Sobota (NL), A. Bourdon (FR)

## **Prizes**

At the 2026 Annual Conference the EPS Plasma Physics Division will recognise researchers who have achieved outstanding scientific or technological results, reflecting and reinforcing excellence in plasma physics.

The **2026 EPS Hannes Alfvén Prize** for outstanding contributions to plasma physics is awarded to **Philippa Browning** (University of Manchester, UK) for innovative results that bridge astrophysical and laboratory plasmas addressing, through analytical insight and magnetohydrodynamic/kinetic modelling, the fundamental features of solar coronal heating, the onset of nanoflares, particle acceleration in magnetic reconnection, and relaxation of magnetic configurations in fusion devices.

At the beginning of her career **Philippa Browning** devoted her research activity to understanding the mechanism of solar coronal heating. In 1991 she systematically analysed possible mechanisms for coronal energy transfer, including magnetic reconnection, instabilities, and relaxation of twisted magnetic flux tubes containing free magnetic energy. Building on this foundation, in 2008 she demonstrated that ideal kink instabilities in twisted coronal flux tubes generate current sheets and trigger rapid magnetic reconnection, releasing energy that heats the plasma. These simulations quantified the relationship between initial current profiles and energy release, providing a rigorous theoretical basis for the nanoflare heating hypothesis and linking magnetic relaxation processes to observable solar phenomena. Subsequently, in collaboration with Mykola Gordovskyy, she demonstrated that this release of magnetic energy in a twisted coronal loop could also provide very effective acceleration of charged particles. She also made significant contributions to the understanding of particle acceleration in two- and three-dimensional magnetic reconnection sites in the solar corona. In particular she elucidated the mechanisms that allow particle acceleration in 2D configurations. In 2005 she extended these results to 3D configurations, relevant to solar flares, examining particle dynamics around 3D magnetic null points. Since the beginning of her career she has been able to unveil the common features of reconnection processes occurring in astrophysical and laboratory plasmas, establishing herself as a reference for both communities. Indeed in 1992 she led the theoretical modelling of the SPHEX spheromak device, elucidating its relaxation mechanisms, associated with the saturation of large-scale kink instabilities of the central column of magnetic field, and their role in helicity injection. More recently, she extended these insights also to tokamak plasmas, investigating the similarities between edge localised modes (ELMs) and solar flares. In particular she contributed to the development of a model based on relaxation theory to predict ELM sizes. Last but not least, through her teaching, she has inspired many students and has supervised a large number of them throughout their academic development.

The **2026 EPS Plasma Physics Innovation Prize** for technological, industrial or societal applications of research in plasma physics is awarded jointly to **Christophe Laux** (CentraleSupélec, Université Paris-Saclay, France) for pioneering work on nanosecond pulsed discharges and demonstrating their practical use for sustainable energy solutions including plasma-assisted combustion and methane plasmalysis.

**Christophe Laux** is a pioneering figure in nanosecond discharge research whose work has fundamentally transformed the field. His contributions have driven the evolution of nanosecond discharges from a scientific concept to industrially-relevant technologies, with three concrete advances directly supporting energy transition and decarbonization efforts: the demonstration of plasma-assisted combustion in aeronautical combustors; the development of predictive modelling tools enabling the use of nanosecond discharges in industrial applications; and the use of nanosecond discharges for methane plasmalysis at an industrial scale.

In plasma-assisted combustion, Laux is widely recognized as a leading authority, as evidenced by his ERC-funded research, his comprehensive reviews of the field, and his role in organizing the first International Symposium on Plasma-Assisted Combustion (SoPAC). One of the exceptional contributions he made to the community concerns scalability. Several studies of plasma-assisted combustion demonstrated that high-voltage (1 – 10 kV) nanosecond repetitively pulsed (NRP) discharges applied at high frequencies (10 – 100 kHz) can extend the operating range of burners, reduce their pollutant emissions, and improve the ignition properties of fuels. However, these studies were long confined to laboratory-scale burners (thermal powers below 10 kW). While Christophe Laux contributed to these fundamental studies, he also demonstrated the capability of the technology to function at high powers (> 100 kW) representative of aeronautical combustors. These achievements were recognized in 2024 with the start of the DEMO-PAC demonstrator, pursued in partnership with Safran Aircraft Engines. This demonstrator features nanosecond discharges applied at high frequencies within a full-scale aeronautical injector operated under industrial conditions (e.g., high pressure, liquid-fuel operation, and high thermal power). This demonstration marks the last decisive step from an academic proof-of-concept to the full deployment in an aeronautical application and could not have been possible without the last twenty years of development within Laux's laboratory.

The second major contribution to plasma-assisted combustion is predictive modelling. The detailed simulation of nanosecond discharges is computationally prohibitive, as the characteristic spatial and temporal scales of plasmas ( $\mu\text{m}$  and ps) differ by many orders of magnitude from those of reacting flows in combustors (m and s). This scale disparity long prevented the inclusion of plasma effects in combustion simulations, effectively blocking any systematic design or optimization at industrial scale. Christophe Laux addressed this fundamental limitation by introducing a physically-grounded phenomenological model for energy branching in NRP discharges, building on his earlier identification of the "ultrafast heating mechanism". This approach dramatically reduced computational cost while retaining quantitative accuracy. To date, it remains the only viable approach for simulating nanosecond discharges in realistic flame configurations and has enabled industrial actors such as Safran to incorporate plasma effects into large-eddy simulations, which are the cornerstone of modern combustor design. Together, these two contributions – demonstrations at aeronautically scales and innovative modelling of NRP discharges – establish Laux as a key architect of the transition of plasma-assisted combustion into a credible industrial technology.

Beyond plasma-assisted combustion, Laux has also had a major impact in the field of hydrogen and solid carbon production via methane plasmalysis, a key technology for the low-carbon energy transition. Building on more than two decades of research on nanosecond discharges in reactive mixtures, his group developed unique expertise in efficiently coupling electrical energy into methane plasmas. Together with one of his former Ph.D. students, this know-how enabled high conversion of  $\text{CH}_4$  into  $\text{H}_2$  while minimizing by-products and thermal losses. In addition to low-carbon  $\text{H}_2$ , the process yields valuable solid carbon – including carbon black and carbon nanotubes – suitable for applications in polymers, batteries, and electronic components, and significantly improves the overall economic balance of the technology. This scientific and technological foundation directly enabled the growth of Spark Cleantech, a start-up founded on concepts developed in Christophe Laux's laboratory. Several of his former Ph.D. students or post-docs are now key contributors within the company. In 2025, the maturity and scalability of this technology were confirmed by a €30 million capital raise, providing a strong industrial validation of the research initiated and sustained by Laux as a scientific advisor.

In addition to plasma-assisted combustion and methane plasmalysis, Laux also serves as a scientific advisor to Airity Technologies (high-voltage DC and pulsed supplies) and PICO (water treatment using nanosecond discharges). Finally, he is a founder of SpectralFit, a company providing the SPECAIR software used by countless research groups, agencies, and industries to interpret plasma emission.

The **2026 EPS-PPCF Sylvie Jacquemot Early Career Prize** is awarded to **Elizabeth Grace** (LLNL, USA) for pioneering development of a novel on-shot laser imaging technique that enables the capture of plasma dynamics with unprecedented detail, advancing the understanding of high energy density physics, and opening new possibilities for research in fusion energy and fundamental plasma science.

**Elizabeth Grace** has demonstrated remarkable innovation and leadership in the field of experimental plasma physics through her development of SAPPHIRE (Single-shot Advanced Plasma Probe Holographic REconstruction), a diagnostic for on-shot, free electron videography at 100 billion frames per second. This novel diagnostic utilises self-referenced wavelength-multiplexed holography to achieve high-fidelity, multi-timestep electron density measurements for underdense plasmas. This method has enabled scientists to capture the dynamic behaviour of plasma with unparalleled temporal and spatial resolution, overcoming previous limitations that required multiple shots or less detailed imaging. Her work not only provides new insights into the fundamental processes governing plasma formation and evolution but also has significant implications for advancing fusion energy research and other high energy density applications. By pushing the boundaries of what is possible in plasma diagnostics, Grace has opened new avenues for scientific exploration and collaboration, inspiring both her peers and the next generation of physicists. Her contributions exemplify the spirit of scientific discovery and have the potential to impact a wide range of disciplines reliant on precise plasma measurements.

The **2026 EPS Plasma Physics Division PhD Research Awards** were judged by a small external committee of referees (Peter Awakowicz, Philippa Browning, Arne Kallenbach, Jean-Claude Kieffer and Marco Valisa) who examined the submitted theses in a process co-ordinated by Monica Spolaore representing the EPS-PPD Board. This year's awards go to (in alphabetical order of surname): **Pablo Bilbao** (University of Lisbon, Portugal) for his thesis "Kinetic instabilities in extreme plasma physics: laboratory and astrophysical dynamics"; **Daniel Fajardo** (Ludwig-Maximilians – University of Munich, Germany) for his thesis "Theory-based integrated modelling of impurity transport in tokamaks"; **Alan Goodman** (University of Greifswald, Germany) for his thesis "Quasi-isodynamic stellarator optimisation"; and **Jessica Schleitzer** (Christian-Albrechts-University Kiel, Germany) for her thesis "Plasma structure and dynamics in dual-frequency discharges: a multi-diagnostic approach from bulk to sheath". For further information on this prize, and long citations for the 2026 prize winners, see [PhD Research Award | European Physical Society – Plasma Physics Division \(ciemat.es\)](https://www.ciemat.es/PhD-Research-Award-EPS-PPD).

The winner of the **2026 PPCF Outstanding Paper Prize** is "[Enhanced confinement in diverted negative-triangularity L-mode plasmas in TCV](#)" by **Stefano Coda** and co-workers.

The winners of the **2026 PPCF/EPS/IUPAP Student Poster Prizes** will be determined during the conference and announced during the closing session.

## Future Conferences

A central objective of the EPS-PPD Board is to establish a multi-year pipeline of future venues for our conference. This is essential if we are to continue to host these meetings in appropriate and affordable facilities (primarily located in major population centres), and at the optimum time of year for our community. The challenge of organising the conference requires careful long-term planning by organisations with greater financial resources than those at our disposal. We are therefore extremely grateful to institutions that are able and willing to provide this service. Local organisation for forthcoming EPS plasma physics conferences will be provided in 2026 by the United Kingdom Atomic Energy Authority (Edinburgh, UK), in 2027 by the École Polytechnique Fédérale de Lausanne (Lausanne, Switzerland), and in 2028 by Laboratori Nazionali del Sud (Taormina, Italy).



*Kristel Crombé, Chair*

*on behalf of the EPS Plasma Physics Division Board*

*8th June 2026*