

Coalition for Plasma Science: Building a Workforce

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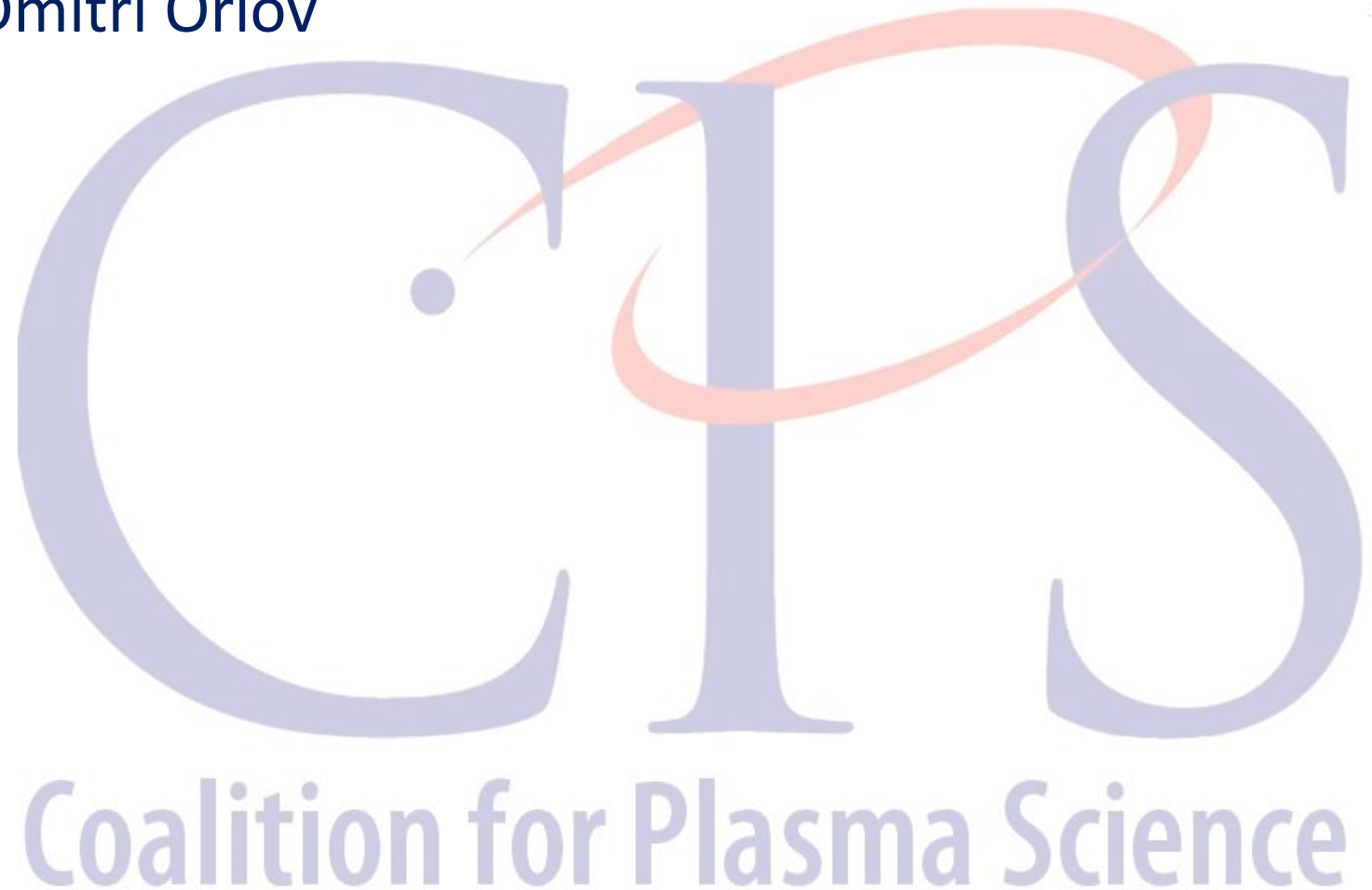
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Fusion Power Associates Meeting

Washington, D.C.

Dec 7, 2022



Intro to Coalition for Plasma Science



- 🔗 Established in 1997 as a non-profit organization.
 - ⚡ Motivation: NRC's 1990s decadal survey of plasma science showed very low level of awareness of the field among both general public and fellow scientists
 - ⚡ Founders: CPS founded by Rick Temkin (MIT PSFC), Toby Smith (MIT Washington Office), Gerald Rogoff (Sylvania, MIT PSFC), Paul Rivenberg (MIT), **Steve Dean (FPA)**.
 - ⚡ Previous Leadership: Lee Berry (ORNL) became chair in 2000s and stepped down in 2019.
- 🔗 CPS developed a highly viewed **web page** (www.plasmacoalition.org) and held well-attended **educational events** for members of Congress and their staffers on **Capitol Hill**.
- 🔗 CPS **funded prizes** in plasma science at the Intel International Science fair.

CPS Current Leadership



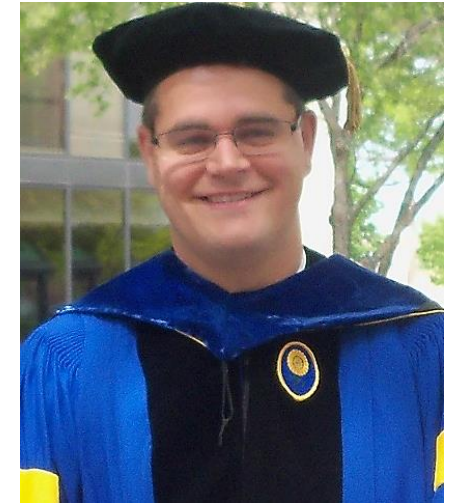
Chair: **Eva Kostadinova**
(Auburn U)



Vice-Chair: **Dmitri Orlov**
(UCSD)



Treasurer: **Steve Dean**
(FPA)



Secretary: **Matthew Moynihan**
(NLF Consultants)

Board: Rick Temkin (MIT), Paul Rivenberg (MIT), Arturo Dominguez (PPPL), Saikat Chakraborty Thakur (Auburn U), Elizabeth Sterling, Mark Kushner (U Michigan)

2022 CPS Initiatives focused on public engagement and workforce development



🔗 **2020 Decadal Finding:** *Plasma-specific educational and research programs that also provide opportunities to diverse and less advantaged populations are needed to ensure a critically populated PSE workforce.*

■ **CPS Initiatives:**

- **APS DPP mini-conference** titled *Workforce Development Through Research-Based, Plasma-Focused Science Education and Public Engagement*
- CPS booths at **PhysCon** Conference and **APS DPP Plasma Expo**.
- Establish **Plasma Network for Engagement and Training (Plasma NET)** to build a community of people working in public engagement, training/education, DEI, education research and related topics

CPS Booths at PhysCon and DPP Expo



- 🔗 Demos focused on Plasma spectroscopy (build your own spectrometer)
- 🔗 Explained the role of James Webb Space Telescope and the search for life beyond Earth
- 🔗 Impact
 - ⚡ PhysCon: hundreds of undergrad students
 - ⚡ DPP Expo: hundreds of high-school students

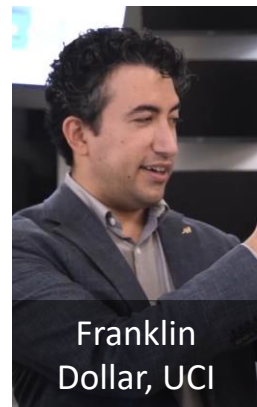
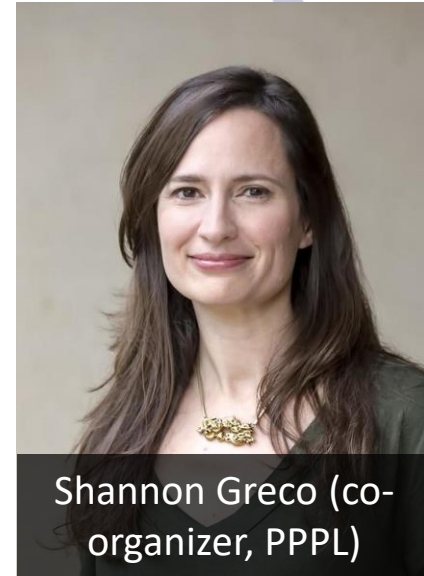


Workforce Development Through Research-Based, Plasma-Focused Science Education and Public Engagement



■ CPS-sponsored APS DPP Mini-Conference:

- Co-Sponsored by PPPL
- Organizers: Eva Kostadinova (CPS) and Shannon Greco (PPPL)
- Overview: two half-days, 17 speakers, diversity of topics (K-12, DEI, physics education research, public engagement, science communication, integration of ideas)

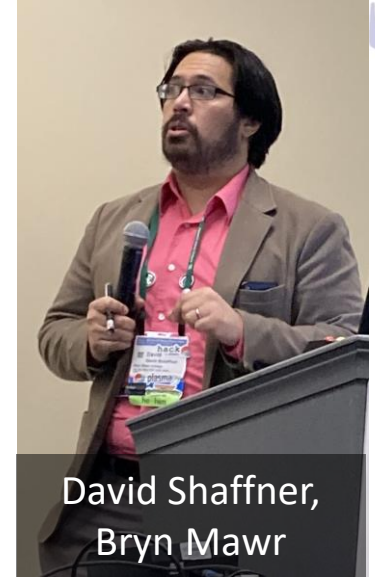


Workforce Development Through Research-Based, Plasma-Focused Science Education and Public Engagement



Topics discussed

- Motivating & engaging K-12 Teachers
- Promoting BIPOC and Marginalized Students
- STEM in rural areas & EPSCoR states
- Mentorship in Physical sciences
- Fusion for high-school students
- Engaging students in public engagement
- Workforce development for user facilities and networks of facilities
- Engaging small colleges and HBCUs
- Establishing networks for informal education



David Shaffner,
Bryn Mawr



Carl Greninger



Elizabeth Oxford
(ZEUS)



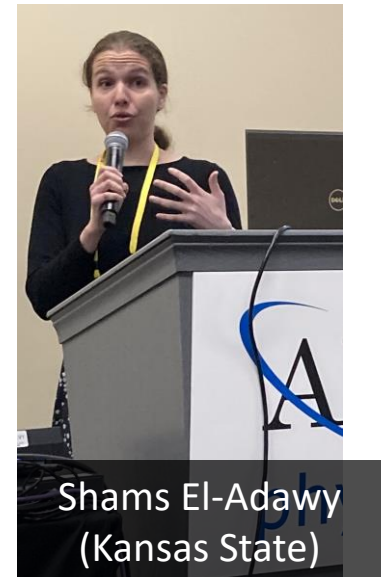
Laura Provenzani
(FTPP-AL EPSCoR)



Chandra Curry
(LaserNet)



Claudia Fracchiolla
(head of APS Public
Engagement)



Shams El-Adawy
(Kansas State)

Workforce Development Through Research-Based, Plasma-Focused Science Education and Public Engagement



■ Outcomes:

- Writing a **report** to be submitted to the special issue of **Physics of Plasmas**
 - ***Contact me if you want to contribute or learn more***
- Collaboration with **PhysicsQuest** to develop **4 plasma kits** to be sent to **5,000 – 10,000 teachers**
 - ***Contact me if you want to design a kit or donate***
- Collaboration with **Contemporary Physics Education Project (CPEP)** to translate their fusion chart posters in different languages
 - ***Contact me if you want to translate a fusion chart and/or distribute it***

Establishment of Plasma NET



- **Main Goal:** *Establish a network of people engaged in plasma-focused public engagement, education/training, DEI, and related topics*
 - Provide support for newly-hired colleagues (e.g., outreach coordinators)
 - Share best practices and establish a repository of materials
 - Incorporate plasma in the Next Generation Science Standards (NPSS)
 - Collect and share data in coordinated way → publications
 - Develop impact assessment tools
 - Compliment the goals of other existing/emerging networks (LasetNet, MagNet, LTPNet, Znet)
 - Improve ways of communication (websites, social media, email lists)

Join the Plasma NET Slack!



Join the Coalition!



- ⚡ Coalition for Plasma Science website: www.plasmacoalition.org
- ⚡ CPS publishes regular newsletters (archive available on the website)
- ⚡ Contact emails: egk0033@auburn.edu (Eva Kostadinova) and dorlov@ucsd.edu (Dmitri Orlov)
- ⚡ List of members includes universities, national labs, private companies, professional societies, international members.