

## APS-DPP Expo Guide

Exhibitor	Description
<b>Auburn University / Wittenberg University</b> Edward Thomas etjr@physics.auburn.edu Jeremiah Williams <a href="mailto:jwilliams@wittenberg.edu">jwilliams@wittenberg.edu</a> <a href="http://psl.physics.auburn.edu">http://psl.physics.auburn.edu</a>	Every day, you encounter all sorts of forces. Most of them are pushing/ pulling forces or gravitational in nature. In many plasmas, we use electric and magnetic forces to hold and control the plasma. This exhibit features a number of hands-on activities that illustrate how forces are used in many physical systems. We'll also demonstrate how we can study plasmas using electromagnetic forces and light.
<b>APS-DPP Outreach</b> James Roche roche@aps.org	Stop by the booth of the American Physical Society – Division of Plasma Physics, who sponsor this Expo, and walk away with science-themed comics, coloring and activity booklets, along with other surprises.
<b>Barry University</b> Sanja Zivanovic szivanovic@barry.edu	Barry University will show simulations of the sun, using a software graphical interface that analyzes data for stellar evolution. Researchers wrote the interface a few years ago, with the help of undergraduate students. The graphical interface allows researchers to plot quantities like temperature and density by changing parameters, such as age and position in the sun.
<b>Contemporary Physics Education Project</b> Sam Lightner lightner@westminster.edu Cherie Harper gsphysics@live.com	The CPEP booth will have several plasma demonstrations and the chance to try your hand at a simple fusion simulation. Also on display will be the <i>Fusion: Physics of a Fundamental Energy Source</i> chart in several languages. Can you identify them?
<b>Florida Atlantic University Society of Physics Students</b> Alexandra De Cesare Adecesare2013@fau.edu	The Society of Physics Students, a sister chapter at Florida Atlantic University focused on getting students interested in physics, will present several plasma demonstrations and some hands-on activities

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**Florida International University  
Applied Research Center**

Dr. Leo Lagos  
lagosl@fiu.edu

FIU's Applied Research Center (ARC) has over 25 years applied research experience developing robotic systems for the nuclear industry. The robotic systems include crawlers for inspections of interior and exterior pipe surfaces in nuclear facilities. Also, ARC has developed several robotic platform and drones equipped with 3D cameras, LiDAR and other technologies for the inspection of nuclear facilities. The students will learn about nuclear contamination issues at commercial and government facilities (also called the back end of the nuclear life cycle), as well as the type of robotic technologies being developed for inspection and decommissioning of these facilities around the globe.

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**Florida International University  
Society of Physics Students**  
sps@fiu.edu

Tulika Srivastava  
tsriv001@fiu.edu

The FIU Society of Physics students are hosting a number of physics demonstrations that relate to their current interests.

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**Florida Polytechnic University  
Society of Physics Students**

Sesha Srinivasan  
ssrinivasan@floridapoly.edu  
Scott Wallen  
swallen@floridapoly.edu

The Florida Polytechnic University Society of Physics students are hosting a number of physics demonstrations that relate to their current interests.

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**General Atomics (GA)**

Rick Lee  
rick.lee@gat.com  
<http://fusioned.gat.com>

GA operates a large magnetic confinement device for the Department of Energy to study high temperature deuterium plasma behavior within fusion relevant conditions. The booth will have highly interactive demonstrations illustrating selected physical science topics, including ionized gas (plasma), magnetism, and the electromagnetic spectrum.

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**Laboratory for Laser Energetics  
(LLE) University of Rochester**

Reuben Epstein  
reps@lle.rochester.edu  
<http://www.lle.rochester.edu>

This laboratory performs experiments in Inertial Confinement Fusion where large powerful lasers create conditions where nuclear fusion of hydrogen liberates energy. This can form the basis of a clean and abundant energy source. Our experiments explore the properties of matter at extremes of temperature and density. Notable contributions to this work have come from our High School Research Program.

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**Lawrence Livermore National Laboratory (LLNL)**

Magnetic Fusion Energy (MFE)

Steve Allen

allens@fusion.gat.com

allen18@llnl.gov

<https://pls.llnl.gov/people/divisions/physics-division/fusion-energy-sciences-program>

The LLNL Collaboration on DIII-D sponsors a booth on DIII-D and spectroscopy that features two large TV screens. On the left screen, a movie features the interior of the DIII-D machine and color movies of the plasma. On the right screen, the output from a visible spectrometer is displayed. A fiber optic couples the light from several spectral sources into the spectrometer; the students can choose H, He, N, Ar, and air plasmas and measure their spectra. They learn that that red color in stars is hydrogen, and the same red color is in the DIII-D plasma.

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**Los Alamos National Laboratory (LANL)**

Liz Merritt

emerritt@lanl.gov

LANL is part of the national effort pursuing inertial confinement fusion (ICF). This booth will explore the concept of ICF and the role of hydrodynamic instabilities in generating fusion energy. The exhibit features hands-on demonstrations of fluid instabilities to help illustrate these concepts. <http://www.lanl.gov/>

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**MIT Plasma Science and Fusion Center (PSFC)**

Paul Rivenberg

rivenberg@psfc.mit.edu

<http://www.psfc.mit.edu>

MIT PSFC features the plasma confinement video game, which demonstrates how plasmas are confined in a typical fusion device (a tokamak). Participants will also learn the properties of magnetism and electromagnetism, and will be encouraged to create a plasma using a "plasma sword."

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**NASA/Exploration Ground Systems (EGS)**

Patrick Lestie Poole

poole11@llnl.gov

Exploration Ground Systems (EGS) Program is a NASA Program housed at Kennedy Space Center. EGS is engaged in being the ground systems for America's Spaceport. Building, Launching and Recovering the new launch vehicle, Space Launch System. We will be available to share the EGS mission verbally and hand out outreach material.

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**National Ignition Facility (NIF) Laser Road Show**

Patrick Lestie Poole

poole11@llnl.gov

LLNL is home to the most powerful laser in the world, the National Ignition Facility. Come by our booth and learn about the laser and some of the experiments that it performs from fusion to astrophysics, and check out our demonstrations of the fiber optics used to form and transmit laser pulses.

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**Northeast High School Lemelson-MIT InventTeam Mosquito Agitator Team**

Randa Flinn

Randa.flinn@browardschools.com

As a recipient of the Lemelson-MIT InventTeams Grant, the Northeast InventTeam/Mosquito Agitator Team invented a device that prevents mosquitoes from breeding in stagnant water. The group will demonstrate techniques necessary for producing an invention prototype. Each of the interactive activities will teach a skill needed to create and test automated electronic inventions.

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**Ohio State University**

Christopher Orban  
Orban.14@osu.edu

Joseph Smith  
Smith.1083@buckeye.osu

Ohio State University will show clips from the STEMcoding project youtube channel (<https://www.youtube.com/c/STEMcoding>) and the BuckeyeVR project (<http://buckeyevr.osu.edu>), which has two free smartphone apps for people to use with Google cardboard in order to visualize electric fields and other intrinsically 3D phenomena in VR. There will be a few smartphones and google cardboard headsets so students can experience it.

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**Plasma Videos / 7-minute talks**

Enjoy a series of videos from institutes and laboratories around the world. Each hour will also feature a brief talk on various topics of interest to science students.

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**Princeton Plasma Physics Laboratory (PPPL)**

Arturo Dominguez  
adomingu@pppl.gov

<http://www.pppl.gov/education/science-education>

The PPPL display will include plasma generators, fluorescent light bulbs, plasma balls, and other hands-on items. In addition, display pictures will be available to show fusion process and fusion research devices.

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**STEM + Computer Science Broward County Public Schools**

Lisa Milenkovic  
Lisa.milenkovic@browardschools.com

Come and try your skills with our VEX robots at our interactive Mars map and check out other robots that we have in the district! The STEM + Computer Science staff will be on hand to answer questions about computer science and robotics initiatives at Broward County Public Schools.

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**Telops**

Ben Saute  
Benjamin.saute@telops.com

<https://www.telops.com/>

The Telops booth will feature a live demonstration of the MS-M2k multispectral thermal infrared camera. Students and other attendees will have the opportunity to learn about infrared imaging and how it can be applied to plasma reactor diagnostics and other high-tech applications.

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**U of California Los Angeles**

Gurleen Bal  
gurleenkbal@physics.ucla.edu

A demonstration of some of the various properties of plasma, such as its conductivity, spectral emission, and behavior under the influence of magnetic fields.

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**University of California San Diego Center for Energy Research**

Saikat Thakur  
saikat@eng.ucsd.edu

Demonstrations: Solar cells (attached to an LED set to see effects of overhead vs inclined sun rays and clouds); Plasma arcs with a hand held Tesla coil that can light up bulbs and tube-lights (and simulates lightning); Building a homopolar motor with simple parts; Demonstration of the fact that electric motors and generators are related by similar physics of currents and magnetic fields

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**University of Central Florida  
Laser and Plasma Laboratory**

Martin C. Richardson  
mcr@creol.ucf.edu

UCF Laser and Plasma Laboratory will share their latest research in laser-produced plasmas, providing table-top optics demos to help explore the underlying principles of the science involved.

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**University of Florida  
Society of Physics Students**

Jonathan Gant  
gantj@ufl.edu

This exhibit will demonstrate the phenomena of resonance and refraction in relation to plasma physics through the creation of grape plasma in a conventional microwave. In addition to the experiment the exhibit will include a poster board and video explaining the physics. The goal of this demo is to show how simple household objects can be repurposed to do interesting physics as well as introduce basic principles of plasma physics.

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**University of Michigan  
The Michigan Institute of Plasma  
Science and Engineering**

Carol Kuranz  
ckuranz@umich.edu  
<http://mipse.umich.edu/>

The Michigan Institute of Plasma Science and Engineering will have several exciting plasma demonstrations. Come see our plasma tube and find out what happens when you put a marshmallow in a vacuum chamber. You can also play our laser game and make waves in a tube.

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**University of Iowa**

Scott Baalrud  
mcr@creol.ucf.edu  
Scott-ballrud@uiowa.edu

You are invited to experience the Planeterella, a hands-on demonstration of the plasma physics involved in the Sun-Earth interaction.

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