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DIII-D Researchers Earn Multiple Honors from American Physical Society

Awards recognize pioneering work in plasma physics at fusion facility operated by General Atomics

San Diego, CA – July 10, 2018: The American Physical Society (APS) has awarded the two most prestigious prizes in plasma physics to researchers working at the DIII-D National Fusion Facility. The awards were based on research carried out at DIII-D, a U.S. Department of Energy user facility operated by General Atomics (GA). The research represented by these awards have transformed our understanding of fusion plasmas and enabled great advances in tokamak performance and control.

GA scientist Keith Burrell won the James Clerk Maxwell Prize for Plasma Physics, which recognizes outstanding contributions to the field. In addition, DIII-D scientists Todd Evans (General Atomics), Max Fenstermacher, (Lawrence Livermore National Laboratory), and Rick Moyer (University of California, San Diego), won the John Dawson Award for Excellence in Plasma Physics Research, which recognizes a particular recent outstanding achievement.

Burrell's research at DIII-D over the past 40 years helped develop and validate the theory that explains how hot plasmas in a magnetic field can self-organize to reach improved states of confinement at higher pressures, which are necessary to create fusion. Through an effect called sheared flow, the plasma can be induced to confine itself within the magnetic field. In future self-sustaining fusion devices, these effects will lead to greater fusion power than would otherwise be possible.

Evans, Fenstermacher, and Moyer were honored for experiments proving that instabilities in fusion plasmas known as edge localized modes (ELMs) can be stabilized by finely tuning the three-dimensional magnetic field. Suppression of ELMs is critically important because of their potential to damage the walls of the fusion tokamak. The methods proven by the team at DIII-D and validated at other facilities have since been incorporated into the design of the ITER device under construction in France.

DIII-D is the largest operating fusion facility in the U.S. and is capable of carrying out a wide range of experiments to explore high-performance tokamak discharges as well as fundamental fusion science. A tokamak is a vacuum chamber in which plasmas are confined by magnetic fields while being heated to force the fusion of hydrogen isotopes. The DIII-D tokamak is renowned for its operational flexibility and rich diagnostic capabilities, enabling a wide range of research in highly shaped plasma configurations.

Both prizes include cash awards and recognition at the APS annual meeting this fall. This is the seventh John Dawson award received for research involving DIII-D, and the second GA researcher honored with the James Clerk Maxwell prize. GA fusion pioneer Tihiro Ohkawa received the award in 1979.

***About General Atomics:** General Atomics pioneers advanced technologies with world-changing potential. GA has been at the cutting edge of energy innovation since the dawn of the atomic age – for more than 60 years. With scientists and engineers continually advancing the frontier of scientific discovery, GA is serving our growing planet's needs through safe, sustainable, and economical solutions across a comprehensive array of key energy technologies.*

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