

Abstract Submitted  
for the DPP16 Meeting of  
The American Physical Society

**Turbulence and Transport in Multi-Ion Species Plasmas in the Large Plasma Device** JEFFREY ROBERTSON, UCLA — Understanding of turbulence and transport in multi-ion-species plasmas is important for establishing predictive capability for burning tokamak plasmas with comparable densities of D and T. Fundamental modifications to drift-wave instabilities and resulting turbulence are expected from theoretical studies, including new instabilities driven by dissimilar ion density gradients [1]. Even in pure ion species plasmas, transport mysteries remain regarding dependence on ion mass such as the isotope scaling of turbulent transport [2]. Recently, experiments have been performed on the Large Plasma Device at UCLA in which mixed Hydrogen-Helium plasmas were created and the relative concentration was varied systematically. The properties of edge turbulence and transport rates were documented and initial results will be presented. Experimental results are will also be compared to linear drift-wave instability theory in plasmas with multiple ion species. [1] New Paradigm for the Isotope Scaling of Plasma Transport Paradox Sokolov, V. and Sen, A. K., Phys. Rev. Lett. 92, 165002 (2004). [2] Isotope scaling and  $\eta_i$  mode with impurities in tokamak plasmas Dong, J. Q. and Horton, W. and Dorland, W., Physics of Plasmas, 1, 3635-3640 (1994).

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Date submitted: 15 Jul 2016

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