



AAPPS-DPP 2018 Plenary speaker Name: Prof. Daniel Lathrop,

Affiliation: Department of physics, University of Maryland

Talk Title: Reconnection and helicity of vortices in quantum fluids and the plasma connection

Short abstract: Superfluid helium exhibits line-like vortices of a topological nature. They can and do cross and reconnect emitting Kelvin waves. In doing so they separate opposite signed helicity, as well as transport that to long range. This process has been captured and analyzed experimentally using flow visualization of tracer particles. Highly magnetized plasmas also exhibit reconnection of magnetic fields, releasing considerable energy. That process is active in the solar corona and the Earth's magnetosphere. The two types of reconnection share several types of phenomenology, dissipative properties, dispersion relations, and lead to power law tails of accelerated particles. These comparisons suggest new types of laboratory plasma reconnection experiments motivated by this work.