University of Wisconsin-Milwaukee

Dept. of Physics
COLLOQUIUM

The Impact of Electron Physics in High Energy Density Plasmas

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The study of high energy density plasmas (HEDP) allows researchers to study the impact of microscopic phenomena on macroscopic scales by using plasmas dense enough to be probed by high energy photons (i.e. visible, UV, X-ray). This probe allows us to use readily available detectors to make precise, two-dimensional measurements of the electron density and infer the electron flow speed and magnetic field.

In this talk, I will highlight how electron physics can shed some light on how long-range interactions can create macroscopic behavior, such as collision-less shocks and particle acceleration, but also how it can be used to test statistical integral operators that can capture more exotic phenomena than simple hard-sphere collisions, which yield Gaussian distributions.

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