Physics & Astronomy Colloquium

Presents

Bruce Remington

Lawrence Livermore National Laboratory

Thursday, September 12, 2019
4:10 pm, Webster Room 17

"From kilobars to gigabars: probing matter at extreme states of deformation on NIF"

Over the past 3 decades, there has been an exponential increase in work done in the newly emerging field of matter at extreme states of deformation and compression, often referred to as high energy density (HED) science. This accelerating progress is due to the confluence of new experimental facilities, experimental techniques, theory, and simulations. Regimes of science hitherto thought to be out of reach in terrestrial settings are now being accessed routinely. High-pressure macroscopic states of matter are being experimentally studied on high-energy, high-power lasers and pulsed power facilities, and next-generation light sources. Combined, this gives experimental access to the properties and dynamics of matter from femtoseconds to microseconds in time scale and from kilobars to gigabars in pressure. There are a multitude of new regimes of science that are now accessible in laboratory settings. Examples include planetary formation dynamics, asteroid and meteor impact dynamics, space hardware response to hypervelocity dust and debris impacts, advanced research into light weight armor impact response, capsule dynamics in inertial confinement fusion (ICF) research, and the basic HED properties of matter. A selection of highlights from this rapidly developing area of science and research will be given.

Please meet our guest speaker and share in refreshments 3:45-4:10 p.m. in the foyer on floor G above the lecture hall

Host: Dr. James Hawreliak

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