

## New frontiers of high energy density science on the NIF laser

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Over the past three decades there has been an exponential increase in the newly emerging field of high energy density (HED) science. With the commissioning of the National Ignition Facility laser at LLNL, this field can now access new regimes of HED conditions in matter. I will describe a selection of examples of the HED science being pursued on NIF and on supporting facilities, drawing from inertial confinement fusion (ICF) and the ignition effort, applied HED science for the labs, and very recent progress in fundamental science on NIF. Areas of interest include probing the properties of matter in deep planetary interiors, stellar birth dynamics, supernova turbulent explosion dynamics, collisionless astrophysical shock formation and evolution, and nuclear reactions in dense HED plasma environments. In conclusion, I will describe the new Discovery Science program on NIF, with a look to the future.

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**Refreshments  
served prior to  
the seminar in  
Rm 124.**