



Contribution ID: 33

Type: **not specified**

## Nuclear Processes in Dynamic High Energy Density Plasmas

*Thursday, 22 June 2017 15:10 (20 minutes)*

Dynamic high energy density plasmas (HEDP) as they are generated in the pico- to nano-second time domain at high-energy laser facilities enable nuclear science research in HED environments. At the National Ignition Facility (NIF), the primary goal of Inertial Confinement Fusion research has led to the synergistic development of a unique high brightness neutron source, sophisticated nuclear diagnostic instrumentation, and versatile experimental platforms. These novel experimental capabilities provide a new path to investigate nuclear processes and structural effects in the time, mass and energy density domains relevant to astrophysical phenomena. The NIF conditions provide an HED environment to investigate the interplay of atomic and nuclear processes such as plasma screening effects upon thermonuclear reactivity and ion energy loss measurement in electron-degenerate plasmas.

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**Session Classification:** Laser-based plasma