

PHASE BOUNDARIES & ULTRA-FAST MELTING OF MATTER IN EXTREME CONDITIONS

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Materials exposed to high pressures and temperatures show profound new properties and a rich variety of material structures. Laboratory experiments now reach pressures in the multi-TPa regime (1 TPa = 10^{12} Pa) exceeding those that exist at the center of earth and produce conditions found inside giant planets, brown and white dwarfs, and in the interiors of stars. To test density functional theory we have developed new ultrafast probing techniques that visualize phase boundaries and transition kinetics. These experiments constrain the electron-ion coupling rate, determine the Debye temperature, and reveal the melting sensitivity to nucleation seeds.

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2:00 PM

CFEL
SEMINAR ROOMS I-III

