Absorption spectroscopy of neighboring Z HED plasmas in the keV X-ray range

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Recent measurements of high energy density plasmas opacities in the keV spectral band were performed on the LULI 2000 facility. Two experiments were realized aimed at probing absorption spectroscopy of two groups of elements, one on the L shell for medium Z (~30) and another one on the M shell for higher Z (~60). LTE plasmas were obtained with the heating of the thermal radiation of a laser-heated spherical hohlraum. A picosecond laser was used to produce a brief radiographic source.
A spectrometer with two independent tracks was specially designed for these experiments operating in the spectral range 8-18 Å including the strong absorbing transitions 2p-3d and 3d-4f. Temperatures of the order of a few tens eV and densities of about 10 mg/cm^3 were deduced from radiation-hydrodynamics simulations coupled to absolute radiative temperature measurements.
Eventually measurements are compared to theoretical calculations provided by the statistical and detailed codes SCO and HULLAC respectively.

8th International Conference on High Energy Density Laboratory Astrophysics
March 15-18, 2010
California Institute of Technology
Pasadena, California, USA
http://hedla2010.caltech.edu/