

Measurements of Iron Opacity on the NIF

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The opacities of iron and other mid-Z elements help to regulate the transport of energy in the sun. Recent experiments on the Sandia National Laboratories Z machine have shown large discrepancies between the measured and calculated opacities of iron at certain solar conditions. To replicate these opacity measurements a platform is being developed on the National Ignition Facility to measure the opacities of iron and other elements at the same conditions as in the Z experiments. The NIF platform consists of a hohlraum to heat the opacity sample to the desired conditions, a separate backlighter to radiograph the sample, and a spectrometer to give the spectrally resolved opacity. Not only must the opacity be measured but the temperature and density of the sample must also be accurately determined. This platform has now produced its first iron transmission measurements. These measurements will be presented along with plans for future measurements and details on how the measurements will be improved.