



Uncertainties in X-ray Opacities: Investigating Problems in Precision Modeling of Laboratory and Astrophysical Plasmas

ORAL

Abstract

Despite significant experimental and theoretical advances in our understanding of x-ray opacities that were gained in the mid-1990s, there remain important discrepancies between experimental and theoretical opacity models that impair efforts to model laboratory and astrophysical systems such as stars and inertial confinement fusion experiments. I will briefly describe a few different projects that I contribute to in efforts to both test and improve opacity models. Specifically, I have compared theoretical opacities developed by the Opacity Project collaboration to experiments at the Sandia Z pinch. I also collaborate on an opacity-related laser experiment led by the University of Michigan that will be conducted at the OMEGA laser in April 2015. Finally, I will discuss, from an astrophysical point of view, the question of how precise opacity models and tabulated opacity data need to be in order to adequately model main sequence stars.

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