

Laser produced plasma XUV opacity measurement at LULI 2000 facility for stellar pulsation studies

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Abstract

Recent laser-produced plasma opacity measurement has been performed at the LULI 2000 facility coupling ns and ps multi 100J beams. Transition 3d elements, among Fe, Ni, Cu and Cr were probed in the XUV 50-250 eV photon energy range. Those elements are eminently known to be responsible for the k-mechanism at the origin of pulsations for massive stars such as beta-Cepheids. Relevant plasma conditions show noticeable discrepancies between OP and OPAL opacity data used in the astrophysical community [1]. Similarly extended comparisons at laboratory conditions show a relatively large dispersion in principle accessible to the measurement [2]. Principle, improvements of recent experiments and preliminary results will be presented.

- [1] S. Turck-Chieze et al., 2011, *Astrophys. Space Science* 336,
Journ. of Phys: Conference Series, 271, 012035
- [2] D. Gilles et al., 2011, *HEDP* 7, 312