

Diagnosics of laser produced plasmas

D. Batani

Université de Bordeaux, CELIA UMR5107, F-33400 Talence, France

The goal of this lecture is to give information on the most important diagnostic used in the field of laser produced plasmas and inertial confinement fusion. In particular I will focus on:

- X-ray diagnostics for fast electrons: Ka spectroscopy; K-a imaging, hard X-ray spectrometry, ...
- Diagnostcis for Shock experiments: Shock chronometry, VISAR, ..
- Backlighting diagnostics with X-ray and proton sources for time resoled radiography.

Due to the small size (μm to a few 100 μm) and the short duration (ps to ns) of laser-produced plasma, the common feature of such diagnostics is the need to have a high spatial and temporal resolution.

Finally I will focus on the PETAL+ project, funded by the French National Research Agency (ANR) and managed by the University of Bordeaux and addressed to design and provide diagnostics dedicated to experiments with the PETAL laser beam. Within this project, three types of diagnostics are planned: proton spectrometry, electron spectrometry and X-ray spectrometry. The goal of these diagnostics will be to assess the characteristics of the secondary sources produced with PETAL, as well as the performance of PETAL itself. Further diagnostics will be installed in the future on the LMJ/PETAL facility to allow HEDP experiments.