

## Channeling 2018



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# High Power Laser Irradiation of Low-Z Porous Media: Numerical Simulations and Experiments

*Wednesday, 26 September 2018 10:00 (30 minutes)*

The internal structure of porous materials determines the features of laser absorption and the characteristics of relaxation and transport processes in laser-produced plasma. Many experiments have been carried on in the last decades, producing a large dataset, which can be the base for improving theoretical models and numerical codes. The microscopic structure of these materials cannot be reproduced in detail in hydrodynamic codes for laser-plasma interactions and for long time the laser-produced plasma behavior has not been correctly reproduced in numerical simulations. For this reason, foam targets have been numerically modeled as constituted by equivalent homogeneous media with the same average density. However, this approach cannot reproduce the peculiar characteristics of plasma evolution and transport phenomena expected for these materials.

After an introduction about the recent progress of the research on porous media, the numerical code MULTI-FM [1] will be presented. MULTI-FM is a modification of the original one-dimensional MULTI [2] code improving its simulation capabilities for porous low-Z targets. Recent experimental results performed at ABC laboratory will be discussed and compared with numerical calculations, along with the results of other experiments reported in the recent literature.

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