

Abstract Submitted
for the DPP15 Meeting of
The American Physical Society

Modeling of energy exchange processes in laser-produced argon plasmas¹ RICHARD JUNE ABRANTES, ANN KARAGOZIAN, HAI LE, Univ of California - Los Angeles — The process of laser-induced breakdown for diagnostics contains a multitude of physical phenomena. An understanding of the interaction between the laser and the plasma is crucial for many applications. In the current work, we developed a collisional-radiative (CR) model for laser-produced argon plasmas. The model is constructed from the LANL database,² which includes all the relevant collisional and radiative processes for all the ionic stages of argon. The laser is coupled to the plasma via multiphoton ionization and inverse Bremsstrahlung; these processes are important for electron production and heating. The use of the CR model allows us to identify dominant mechanisms responsible for initial breakdown of the gas and thermal equilibration processes. The results are compared with experimental data from laser-induced breakdown experiments.³

¹Research supported by the AFOSR.

²Argon Atomic Data Sets. <https://www-amdis.iaea.org/LANL/argon/>

³Sircar et al. *Appl. Phys. B* 63, 623-627 (1996).

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Date submitted: 24 Jul 2015

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