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Laser Induced p+11B Fusion by Resonant Nanorod Antenna Array

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The NanoPlasmonic Laser Induced Fusion Energy (NAPLIFE) project by simultaneous ignition of the whole target, aims to avoid instabilities and pre-detonation. Fusion by regulating the laser light absorption via resonant nanorod antennas implanted into hydrogen rich polymer targets. This is the only project using this method, up to now. Boron-nitride (BN) was added to UDMA-TEGDMA polymer. Theoretical considerations and first verification experiments are presented. Our experiments with resonant nanoantennas accelerated protons up to 225 keV energy were accelerated. These protons led to p + 11B fusion, indicated by the sharp drop of observed backward proton emission numbers at the 150 keV resonance energy of the reaction. The generation of alpha particles was verified.

Primary author: CSERNAI, Laszlo P. (University of Bergen)

Presenter: CSERNAI, Laszlo P. (University of Bergen)