Experimental demonstration of diamagnetism of laser produced plasma

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Abstract:

An Nd:YAG laser has been used to generate Aluminum plasma plume in the presence of transverse magnetic field varying from 0 to 0.57 T. Two internally synchronized ICCD cameras, mounted in a direction orthogonal to the plume propagation have been used to study the dynamics of the evolving plasma plume along and across the magnetic field lines. A well defined cavity-like structure has been observed at lower delay time and comparatively lower magnetic fields in a plane perpendicular to the direction of the magnetic field. The cavity-like structure changes to jet-like structure which transformed to slab-like structure with further increase of delay time. These types of structure and dynamics are correlated to the plume expansion in diamagnetic and non-diamagnetic limits.

Keywords: High power laser, laser matter interaction, fast imaging

References: