Abstract Submitted
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Three-Dimensional Modeling of Laser-Plasma Confinement in a Strong Magnetic Field[1] LUIS LEAL, ANDREI MAXIMOV, RICCARDO BETTI, ADAM SEFKOW, Laboratory for Laser Energetics, VLADIMIR IVANOV, University of Nevada, Reno — Plasmas created by laser pulses in strong magnetic fields generated by pulsed-power machines can be confined into different shapes (discs or jets) depending on the magnetic field and laser orientations.[2,3] Experiments performed at the Zebra Facility at the University of Nevada, Reno, coupled a $\lambda = 1.06$-mm laser pulse of intensity 3 10^{15} W/cm^2 to a rod with an axially driven current generating a 3-MG azimuthal magnetic field. The generated plasma was confined in the axial direction and expanded in the azimuthal direction following the field lines to form a plasma disc. Two-dimensional modeling has previously shown the axial confinement of the plasma with expansion in the radial direction. We now present 3-D modeling results using *HYDRA* that show axial confinement of the plasma along with its azimuthal expansion, leading the plasma to move along the field lines of the external magnetic field. The effects of different terms in Ohm's law on the structure and dynamics of the plasma are discussed.

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[2]V. V. Ivanov *et al.*, Plasma Phys. Control. Fusion **59**, 085008 (2017).
[3]V. V. Ivanov *et al.*, Phys. Plasmas **26**, 062707 (2019).

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