

Abstract Submitted
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Axial Sheared Flow Stabilization of Conical Array Plasma Jets¹

LUCAS WANEX, RADU PRESURA, University of Nevada, Reno — Experiments with conical array implosions on a central axial wire at the Nevada Terawatt Facility offer evidence that axial shear provides a stabilizing influence in precursor plasma jets. Axial plasma flow converging on a central wire produces a stable precursor jet. Similar experiments without a central wire produce a very unstable plasma. By comparison cylindrical array implosions on a central wire do not generate axial flow in the plasma. Experimental evidence indicates that the kink instability is present in cylindrical array implosions. Analytical results show that axial shear is introduced into the jet by the no-slip boundary condition between the axial plasma flow and the central wire. A numerical linear analysis also complements our finding that axial sheared flow reduces instability growth rates in conical array precursor plasma jets.

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