

Suppressed Kink Instability Growth in Seeded Z-Pinch

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Several observations have shown that astrophysical jets remain collimated over distances much larger than their diameter despite having an associated current along the jet. It has been proposed that the low density interstellar medium might impose a sheared flow which is capable of stabilizing instabilities such as the kink. In the laboratory, the Z-pinch also has a column of plasma that is confined by the magnetic field which is unstable to the kink instability. The growth of the kink instability can be accentuated by using a center wire with a helical perturbation. Previous experiments have shown that a center wire added to a conical wire array creates a sheared flow. Both cylindrical and conical wire arrays were investigated with the helical center wire, such that the stabilizing effects of sheared flows can be determined.