

Abstract Submitted  
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**Flow velocity measurements of a flux rope in PHASMA<sup>1</sup>** PRABHAKAR SRIVASTAV, PEIYUN SHI, ERIC REYNOLDS, CUYLER BEATTY, EARL SCIME, Department of Physics and Astronomy, West Virginia University, Morgantown, West Virginia 26505, US — Current-driven instabilities play a critical role in the evolution of magnetic flux ropes – in laboratory and astrophysical systems. A single flux rope is created with a pulsed plasma gun in the PHASMA (PHase Space Mapping) experiment. The flux rope exhibits a kink instability. Axial and poloidal flows during the growth of the instability are measured with an array of Mach probes. The poloidal flow velocity is investigated in the context of the flux rope rotation for plasma gun currents below and at the kink threshold. We also present measurements of the magnetic field structure, the electron temperature, and the plasma density of the flux rope.

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