

**DEVELOPMENT OF LASER BASED DIAGNOSTICS
FOR THE INVESTIGATION OF WIRE ARRAY Z-
PINCH DYNAMICS ON THE MAGPIE GENERATOR**

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End on Interferometric imaging is a useful technique for diagnosing the electron density distribution in the interior of wire array z-pinches during their ablation phase. These measurements are limited as there is often no known density reference point in the image. By using a time resolved, CW line integrated interferometry system, we can measure the electron density for a single point on the image. This allows us to calculate the density distribution across the remainder of the image. Two new quadrature interferometry systems are discussed, the first free space and the second fiber based. Also discussed is a new fiber based multipoint Heterodyne Velocimetry (HET-V) system, for the time resolved measurement of large velocities and accelerations, and a new faraday rotation current probe system, to measure rapidly rising currents in new switched mode wire arrays.

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