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Recent developments at the CLEAR Plasma Lens Experiment

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The Plasma Lens Experiment at CERN is an experiment in active plasma lensing. It consists of a gas-filled sapphire capillary connected to a set of compact Marx banks, which breaks down the gas and drives a large current pulse through it. This generates a magnetic field, which is probed using the CLEAR electron beam and measured using various screens and magnetic elements behind the lens. We characterize the development of non-linearities in the current distribution and how to avoid them, over a range of gasses, capillary types, and currents. We show that emittance preservation in the lens is possible by carefully choosing the operating point of the lens. We also discuss the results and technical developments from the recent CLEAR runs.

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