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CURRENT STATUS OF PLASMA DIAGNOSTICS OF A PROTOTYPE PLASMA LENS AS AN OPTICAL MATCHING DEVICE FOR THE ILC e^+ SOURCE

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In recent years, high-gradient, symmetric focusing with active plasma lenses has regained significant interest due to the potential advantages in compactness and beam dynamics compared to conventional focusing elements. One potential application is the optical matching of highly divergent positrons from the undulator-based ILC positron source into the downstream accelerating structures. In a collaboration between University Hamburg and DESY Hamburg a downscaled prototype for this application has been developed. Here, we discuss first plasma diagnostics results, such as electron and current density measurements, as well as future plans for measuring the magnetic field distribution, and a possible fullscale prototype version.

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