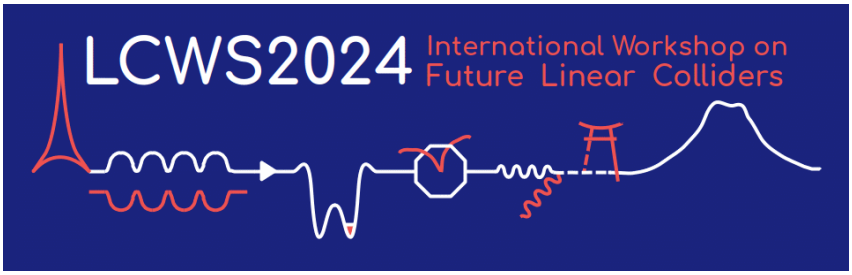

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Hydrodynamic Simulations of an Argon-filled Tapered Plasma Lens for Optical Matching at the ILC e^+ Source

Wednesday 10 July 2024 16:20 (20 minutes)

The beam produced in the target of the ILC positron source is highly divergent and therefore requires immediate optical matching, conventionally performed by some kind of solenoid arrangement.
Recently, the use of a plasma lens has been considered as an alternative with hopes to increase number of positrons available for the downstream acceleration. Previous simulations have indicated that a plasma lens design with linear tapering is optimal for the ILC positron source.
In the latest hydrodynamic simulations, argon is studied as the plasma medium for the aforementioned plasma lens design. During these studies, argon's various reaction paths are systematically examined to understand their impact on the discharge process. This is followed by a comparison with hydrogen.

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