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Investigation of plasma stability of the prototype plasma lens for optical matching at the ILC e+ source

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The quest for novel technologies in the ever-evolving landscape of scientific exploration has led to the investigation of plasma lensing as a potential solution for optical matching devices at the International Linear Collider (ILC) positron source. This research becomes increasingly significant as the need for higher data output demands innovative concepts to increase positron yield and therefore luminosity. Our initial experiments revealed instabilities within the plasma. This talk will delve into these instabilities, explore their potential causes and the challenges they would pose. We'll discuss strategies for stabilizing the plasma to enhance the development of an efficient optical matching device. Overcoming these challenges is pivotal for a future application of plasma lenses as an integral part of a high performance ILC positron source.

Footnotes

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