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Overview of positron acceleration in plasma-based accelerators

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One of the main motivations for research in plasma wakefield acceleration is the advancement of high energy physics, and in particular the construction of a linear electron–positron collider. While great progress has been made in high-efficiency, high-gradient, high-quality acceleration of electron beams, acceleration of positrons is significantly more difficult in a plasma due to an inherent charge asymmetry. While several recent experimental and theoretical studies have attempted to bridge this gap, a complete solution is yet to be identified. In this talk, we will review the fundamental challenges of positron acceleration, ideas proposed to overcome these challenges, as well as past and future experiments.

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