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Trojan Horse-II at FACET-II: prospects and experimental plans.

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Plasma photocathodes aim for the tunable production of compact electron beams with normalized emittance and brightness many orders of magnitude better than conventional sources. Experimental realization of such beams would open numerous prospects for transformative plasma wakefield accelerator applications based on ultrahigh-brightness beams. Developing a plasma capable of high-gradient acceleration but also as a source of practical electron bunches is paramount. Here, we present details of the upcoming E-310: Trojan Horse-II program at FACET-II specifically reporting on the development of a preionized plasma channel suitable for optimizing charge injection and stable energy gain.

Acknowledgments

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