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Tunable Dielectric Structure for Extended Interaction Length Laser-Driven Acceleration

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Dielectric Laser Accelerators (DLAs) can support GeV/m gradients, allowing for the possibility of MeV energy gain over only millimeters. Increasing energy gain requires developing tunable multi-mm structures. We present experimental results using a tunable dual grating structure to modulate 6 MeV electrons by up to 200 keV. We observe energy modulation up to an interaction length of 1 mm, the longest observed DLA interaction so far.

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