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## **Plasma Transmission Gratings for Compression of High-Intensity Laser Pulses**

*Friday, 18 April 2025 10:06 (33 minutes)*

Future laser-driven plasma accelerators will require femtosecond-pulsed lasers that can deliver high peak powers at high repetition rates, posing significant challenges for current laser technology. Replacing key components in high-power lasers with plasma alternatives allows the manipulation of high-intensity beams and the construction of compact and damage-resistant laser systems. Here we discuss methods for building chirped-pulse-amplification lasers using plasma gratings and diffractive optics. We present experimental measurements of plasma grating performance and optical properties, including dispersion and diffraction efficiency, and show the constraints that achievable plasma optic properties place on the design of next-generation lasers.

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