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Fourth-Generation Laser for Ultra-Broadband Experiments—Expanding Inertial Confinement Fusion Design Space Through Mitigation of Laser– Instabilities DUSTIN FROULA, R. K. FOLLETT, C. DORRER, J. BROMAGE, E. M. HILL, B. E. KRUSCHWITZ, J. P. PALASTRO, D. TURNBULL, Laboratory for Laser Energetics — To demonstrate hydro-equivalent ignition in OMEGA direct-drive experiments, mitigation of cross-beam energy transfer (CBET) and hot-electron generation is likely necessary. Laser–plasma instability (LPI) modeling predicts that an ultraviolet laser with $\Delta\omega/\omega > 1\%$ would increase the laser absorption on OMEGA implosion experiments from 55% to 90% by mitigating CBET while increasing the intensity threshold for hot-electron generation by a factor of 3. An LPI platform is currently being developed on OMEGA that will provide a test bed to demonstrate LPI mitigation using a novel laser FLUX (Fourth-generation Laser for Ultra-broadband eXperiments), which will produce $\Delta\omega/\omega > 1\%$ bandwidth around 351 nm. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0003856.

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