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Determining Acceptable Limits of Fast-Electron Preheat in Polar-Drive–Ignition Designs J.A. DELETTREZ, T.J.B. COLLINS, Laboratory for Laser Energetics, U. of Rochester, C. YE, Webster Schroeder High School — In direct-drive–ignition designs, preheat by fast electrons created by the two-plasmon–decay instability at the quarter-critical density surface can increase the adiabat in the fuel layer and prevent ignition. Since eliminating the preheat entirely is not possible, it is necessary to understand the levels of preheat our targets can withstand before ignition is precluded. The current polar-drive point design is used as the basis for examining the effects of increasing the levels of fast electrons using the one-dimensional, radiation–hydrodynamics code *LILAC*. Once ignition failure is obtained, the design is then reoptimized using *Telios*, a downhill simplex method program, to recover ignition. This cycle is repeated until the design can no longer be reoptimized to produce ignition. Mappings of these final results provide insight into ignition failure caused by preheat and what specific target parameters serve to best stave off the effects of the preheat. This material is based upon work supported by the Department of Energy National Nuclear Security Administration under Award Number DE-NA0001944.

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