Integrated hybrid-PIC modeling of fast ignition FREDERICO FI-
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The integrated modeling of fast ignition of ICF targets is important to understand
the electron source requirements and the optimal laser/target configuration for ig-
nition. We have used the hybrid-PIC algorithm of OSIRIS [F. Fiuza et al., PPCF
53, 074004 (2011)] to model fast ignition in a self-consistent way at realistic den-
sities, spatial and temporal scales. We will present a detailed analysis of the laser
absorption and the fast electron source characterization for different laser and tar-
get parameters in 2D and 3D. Integrated electron transport and energy deposition
calculations for realistic ignition laser parameters (100 kJ, multi-ps) will be shown
and used to identify the electron source requirements for ignition. The control of
the electron energy distribution and divergence by using of an external magnetic
structure and/or multiple radially incident short pulses will be discussed, showing
the possibility of achieving conditions consistent with ignition.

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