

Abstract Submitted  
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**Reduced Phase-Space Models of Intense Laser-Plasma Interactions**<sup>1</sup> B.A. SHADWICK, Department of Physics and Astronomy, University of Nebraska Lincoln and Institute for Advanced Physics, C.B. SCHROEDER, LOASIS Program, LBNL, G.M. TARKENTON, Institute for Advanced Physics, E. ESAREY, LOASIS Program, LBNL — We undertake a detailed comparison of a variety of reduced models — moment based descriptions: warm<sup>2</sup> and cold fluids as well as fixed-shape distributions: water bag, *etc.* — to direct solutions of 1-D Vlasov equation<sup>3</sup>. We examine the quality of the agreement between the various models as a function of both initial plasma temperature and plasma wave amplitude. We determine parameter regimes of validity for the various reduced models and comment on applicability of these models to studying laser-driven plasma accelerators.

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<sup>2</sup>B. A. Shadwick, G. M. Tarkenton and E. H. Esarey, Phys. Rev. Lett.**93**, 175002 (2004).

<sup>3</sup>B. A. Shadwick, G. M. Tarkenton, E. Esarey, and C. B. Schroeder, “Fluid and Vlasov Models of Low-Temperature, Collisionless, Relativistic Plasma Interactions,” Physics of Plasmas **12**, 056710 (2005).

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