Abstract Submitted
for the DPP17 Meeting of
The American Physical Society

Theory and simulation of multibeam stimulated Raman scattering in inertial confinement fusion CHENGZHUO XIAO, School of Physics and Electronics, Hunan University, Changsha, 410082, China, HONGBIN ZHUO, YAN YIN, College of Science, National University of Defense Technology, Changsha, 410073, China, ZHANJUN LIU, CHUNYANG ZHENG, XIAN-TU HE, Institute of Applied Physics and Computational Mathematics, Beijing, 100094, China — Collective effects of multibeam laser plasma interactions are of great interests in recent years [1,2,3]. Here, we have demonstrated a general theory of multibeam stimulated Raman scattering (SRS) with arbitrary beam number and beam polarization incident in a cone geometry in both homogeneous and inhomogeneous plasma. Scattering geometry with a shared Langmuir wave or a shared electromagnetic wave are the ones that with the maximum growth rates as predicted by DuBois et al [4]. In addition to those scattering geometries, cone scattering where scattered lights perpendicular to the cone axis is dominant over common wave geometry in the nonlinear stage. In particle-in-cell simulations we have verified the effects of three scattering geometries, and obtained the density and incident angle dependence of the effects of multibeam SRS relevant to the indirect-drive ignition conditions. [1] S. Depierreux et al., Phys. Rev. Lett. **117**, 235002 (2016). [2] P. Michel et al., Phys. Rev. Lett. **115**, 055003 (2015). [3] E. L. Dewald et al., Phys. Rev. Lett. **116**, 075003 (2016). [4] D. F. DuBois, B. Bezzerides, and H. A. Rose, Phys. Fluids B **2**, 241 (1992).

Chengzhuo Xiao
School of Physics and Electronics, Hunan University

Date submitted: 21 Jul 2017 Electronic form version 1.4