

Abstract Submitted
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Individual vs. collective behavior of backscatter from multiple overlapping lasers in plasmas¹ PIERRE MICHEL, LAURENT DIVOL, Lawrence Livermore National Laboratory — Inertial confinement fusion (ICF) or high energy density (HED) experiments typically involve a large number of laser beams overlapping in plasmas, in conditions often prone to laser-plasma interaction (LPI) processes such as backscattering instabilities. Here we investigate how backscatter from one beam is affected by the presence of other overlapping beams, and under which conditions the collective behavior (i.e. multiple overlapped beams acting together as one) dominates over the sum of the individuals (i.e. each beams backscatter independent of the others). Understanding collective LPI behavior in ICF or HED can help with the interpretation of on-going experiments at large-scale laser facilities and guide the design of future lasers, for example regarding the optimization of the number of beams and their separation in the near-field.

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