

Abstract Submitted
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Wakefields in a Cluster Plasma¹ M. MAYR, University of Oxford (UO), L. CEURVORST², M. KASIM, J. SADLER³, UO, K. GLIZE, Central Laser Facility (CLF), A. SAVIN, UO, N. BOURGEOIS, CLF, F. KEEBLE, University College London (UCL), A. ROSS, B. SPIERS, UO, D. SYMES, CLF, R. ABOUSHEL-BAYA, UO, R. FONSECA, ISCTE Lisbon, J. HOLLOWAY, N. RATAN, UO, R. TRINES, CLF, R. WANG, UO, R. BINGHAM, University of Strathclyde, L. SILVA, GoLP IST Lisbon, P. BURROWS, UO, M. WING, UCL, P. RAJEEV, CLF, P. NORREYS, UO, CLF — We report the first comprehensive study of large amplitude Langmuir waves in a plasma of nanometer-scale clusters. The shape of these wakefields was captured by a single-shot frequency-domain holography diagnostic at an oblique angle of incidence for the first time. The wavefronts are observed to curve backwards, in contrast to the forwards curvature of wakefields in uniform plasma. The first wakefield period is longer than those trailing it. The features of the data are well described by fully relativistic two-dimensional particle-in-cell simulations and a one-dimensional model solving a coupled system consisting of the equation of motion, Ampere's law and the Poisson equation for strong density perturbations.

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