Abstract Submitted
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Explosion of relativistic electron vortices in laser plasmas[1] KIRILL LEZHNIN[2], Princeton Univ, FEDOR KAMENETS, Moscow Institute of Physics and Technology, TIMUR ESIRKEPOV, SERGEI BULANOV[3], National Institutes for Quantum and Radiological Sciences and Technology, YANJUN GU, STEFAN WEBER, GEORG KORN, Institute of Physics of the ASCR, ELI-Beamlines — The interaction of high intensity laser radiation with underdense plasma may lead to the formation of electron vortices. Though being quasistationary on an electron timescales, these structures tend to expand on a proton timescale due to Coloumb repulsion of ions. Using a simple analytical model of a stationary vortex as initial condition, 2D PIC simulations are performed. A number of effects are observed such as vortex boundary field intensification, multistream instabilities at the vortex boundary, and bending of the vortex boundary with the subsequent transformation into smaller electron vortices.

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