

Abstract Submitted
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Thermal equilibrium of intense beam propagation through a periodic solenoidal focusing field¹ JING ZHOU, KSENIA SAMOKHVALOVA, CHIPING CHEN, Intense Beam Theoretical Research Group, Plasma Science and Fusion Center, Massachusetts Institute of Technology, Cambridge, Massachusetts 02139 — A thermal Vlasov equilibrium is obtained for an axisymmetric charged-particle beam with nonuniform density in the radial direction propagating through a periodic solenoidal magnetic focusing field. The thermal beam distribution function is constructed and the beam envelope equation which is consistent with the thermal density distribution is derived. Examples of periodically focused rigid-rotor thermal equilibria are presented. Statistical properties and possible applications of the thermal beam equilibrium are also discussed. Effects of the thermal temperature and nonlinear forces are being studied, and results will be presented.

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