

CENTROID DYNAMICS OF MAGNETICALLY FOCUSED INTENSE RELATIVISTIC CHARGED BEAMS SURROUNDED BY A CONDUCTING WALL

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Abstract

In this paper, we investigate the combined envelope-centroid dynamics of relativistic continuous charged beams transported through a uniform focusing field and surrounded by a conducting wall. For such beams, the conducting wall screens the electric field but allows magnetic field penetration, enhancing the induced charges effect on the beam transport. As a consequence, in contrast to the case of non-relativistic beams where the walls are shown to have little effect*, relativistic beams may have their centroid motion severely affected, leading to limitations in the total current and area occupied by the beam inside the conductor. Self-consistent simulation are used to verify the findings.

**CONTRIBUTION NOT
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