

Physics and Applications of High Brightness Beams



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Beam dynamics inside a transversely asymmetric wakefield

Flat or transversely asymmetric beams create transversely asymmetric wakefields. These wakefields are characterized by the creation of an elliptical cavity created by the evacuated plasma electrons and remnant ions. The potential inside these elliptical cavities is quadratic and yields transverse electric fields that are linear. Particle beams inside the blowout cavity can be matched to these asymmetric focusing fields and exchange energy with the electromagnetic fields. Simulations are performed to investigate the beam dynamics inside this blowout cavity and the attainable parameter space is discussed.

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