



Contribution ID: 31

Type: talk

Self modulated dynamics of a relativistic charged particle beam in plasma wake field excitation

Wednesday, 16 September 2015 18:20 (20 minutes)

The self modulated dynamics of a relativistic charged particle beam is described within the theory of plasma wake field excitation, where the plasma is assumed to be magnetized, warm and collisional. A novel generalized Poisson-like equation for the wake potential is derived and coupled with the collisional Vlasov equation for the beam dynamics. The virial description and the stability analysis are then provided.

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Session Classification: WG6 - Theory and simulations

Track Classification: WG6 - Theory and simulations