Collective transport of a charged particle beam through an unmagnetized plasma within the framework of the Vlasov's kinetic theory in strongly nonlocal regime

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Poster Presentation

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Within the Vlasov's kinetic theory, describing the plasma wake field interaction, the collective transport of a relativistic charged particle beam is analyzed in the strongly nonlocal regime, where the beam spot-size is much less than the plasma wavelength. The beam is supposed to be sufficiently long to experience the adiabatic shielding by the plasma. The linear response of the system is analyzed and the Landau damping and the instability conditions are discussed.