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## Phase space moment equation model of highly relativistic electron beams in plasma wakefield accelerators

*Thursday, September 17, 2015 4:00 PM (20 minutes)*

This talk outlines a new theoretical procedure for modelling the transverse dynamics of relativistic electron beams injected into plasma-based accelerators operated in the blow-out regime. Quantities of physical interest, such as the emittance, are furnished directly from solution of phase space moment equations formed from the relativistic Vlasov equation. The moment equations are closed by an Ansatz, and then solved analytically for a prescribed wakefield. The accuracy of the analytic result is established by benchmarking against both a semi-analytic numerical procedure and a PIC simulation.

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