

A Vlasov-Fokker-Planck equation for electron beams

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In the storage ring of a synchrotron, the radiation produced by the electron beam is a powerful light source, which can be used in various scientific experiments. In this talk, I will present a model which describes the longitudinal dynamics of a relativistic electron bunch in this kind of particle accelerator. It consists in a Vlasov-Fokker-Planck equation with non-symmetric self-consistent interactions. I will discuss the derivation of the model as well as its well-posedness, regularity and long-term behavior of solutions.

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