Accelerator Physics Seminar
Tuesday June 17, 2003
(16.00 in Room 459/30b)

Intra–Beam Scattering and Coasting Beam at HERA–p

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Abstract
The coasting beam, i.e. the particle population in the gaps between the bunches, may sufficiently harm the experiments and is therefore strongly unwanted. However, mechanisms of its production are not clear for the moment. The so called intra–beam scattering, the elastic scattering of particles from the same bunch on each other, is thought to be a potential source of the problem. A general theory of such collision driven processes which traces its routes to Boltzmann, suggests equations that cannot be straightforwardly applied to the area of proton storage rings. The existing results give good estimate for emittance growth but fail to explain the particle behaviour in the tails and the escape mechanism from the RF buckets. We try to fill this gap by describing the intrabeam scattering with a kinetic model based on Markov chain theory. I will present the mentioned model and discuss the simulation results relevant for HERA.

D.P.Barber (MPY) and M.Vogt (MPY).

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