

COLLISIONAL EFFECTS AND DYNAMIC APERTURE IN HIGH INTENSITY STORAGE RINGS

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We analyze the dynamic aperture in presence of strong sextupolar errors for a high intensity beam. The scaling laws for the short term dynamic aperture are examined and its dependence on the perveance is discussed in a mean field approximation for a coasting beam. The collisional effects of Coulombian interaction are estimated for a linear lattice using a scaling law for the relaxation time. The collisional effects on the long time dynamic aperture are discussed by comparing the results of full Hamiltonian integration with a mean field theory. An application to a storage ring with the HIDIF parameters is briefly outlined.