

Simulation Study of Bunch Lengthening in the BEPC Storage Ring, G. WANG, Y. LI, Z. GUO, Tsinghua University, Beijing, China - We use many-particle simulation, investigate the single bunch behaviour of BEPC storage ring. In simulation, the beam was represented by many macro-particles. The effect of wave field on longitudinal phase space of the beam was calculated by transforming wake field in time domain into impedance in frequency domain. We use 8 main impedance modes that were obtained from measurement to superimpose the total impedance. The particle number in simulation is 100,000, and time of simulation is 5 damping time. The simulation result of 2.015 GeV, the threshold current and the curve of bunch length versus beam current, agrees well with the measurement results. At the same time, the influences of potential well distortion and increase of energy spread on the bunch lengthening were compared and analysed.