

An Instability due to Beam-Photoelectron Interactions in Positron Storage Rings, K. OHMI,

KEK - Beam-photoelectron interaction may be serious for positron storage rings operated multibunch¹. B factories designed in KEK and SLAC are afraid to suffer by this problem. In both projects, multibunch and high current positron storage rings are planned for low energy rings. The characteristics of the interaction is expressed as follows:

1. Rapid formation of the photoelectron cloud.
2. Rapid clearing of the photoelectron cloud.
3. The interaction is represented by a short range wake force.
4. The characteristic time mentioned above is several x 10 ns.
5. The wake force have a good linearity for transverse amplitudes up to about ~1 cm.

1 K. Ohmi, Phys. Rev. Lett. 75, 1526 (1995).