SPACE-CHARGE EFFECTS IN THE ILC DAMPING RINGS

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The need to accommodate the long bunch trains suitable for a cold linear collider and limitations to the kicker technology will cause the International Linear Collider (ILC) damping rings to be fairly large. A several Km long circumference and small emittance at extraction will combine to produce a sizeable and potentiallyharmful vertical space-charge tuneshift - an unusual feature for high-energy electron storage rings. We report on our study of space-charge effects for the lattice designs presently under consideration including the coupling bumps that have been proposed to tame the magnitude of those effects. We employ the code MaryLie/Impact and explore several models of beam dynamics with varying degree of accuracy and self-consistency in the treatment of space-charge.