

Prospects for FCC-ee polarization

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Abstract

For precise beam energy measurements at the FCC-ee the use of resonant depolarization has been suggested. In addition longitudinal beam polarization would benefit the Z peak physics program. The time constant of self-polarization (Sokolov-Ternov effect), which in such a large ring is 14 hours even at 80 GeV (WW resonance), is the first issue. This time can be greatly reduced by inserting proper wigglers in the machine lattice. The resulting large beam energy spread however may destroy polarization in presence of unavoidable magnet misalignments. This calls for precise machine alignment and careful orbit correction.

In this paper the possibility of polarization in the FCC in presence of wigglers is investigated and first simulations at 45 GeV with quadrupole misalignment and orbit correction are presented.

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