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Possible harmonic spin matching schemes using orbit bumps for the Future Circular Collider e+e-

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There is a notable prospect of attaining high precision measurement of the center-of-mass energy in the Future Circular Collider e+e- (FCC-ee) at Z and W energies using resonant spin depolarization, the realization of which is based on a sufficient transverse beam polarization level. The application of harmonic spin matching schemes using closed orbit bumps holds promise for improving the equilibrium polarization under the presence of large machine errors. In this study, the potential optimization schemes that can be applied in the FCC-ee have been explored and compared. A comprehensive scheme has been proposed to fulfill the FCC specifications, the effectiveness of which has been testified in Z, W and even ttbar lattices.

Footnotes

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