

Analysis of Closed-Orbit Deviations for a first direct Deuteron Electric Dipole Moment Measurement at the Cooler Synchrotron COSY

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This presentation investigates closed orbit influencing effects focusing on transverse orbit deviations. Using a model of the Cooler Synchrotron COSY at the Forschungszentrum Jülich implemented in the Methodical Accelerator Design program, several magnet misalignments are simulated and analyzed. A distinction is made between magnet displacements along the axes and rotations around them. Results are always analyzed for the uncorrected as well as for the orbit after the application of an orbit correction. Furthermore, the effect of displaced beam position monitors is simulated and a constraint resolution of their readout is considered. Besides magnet misalignments also field variations resulting from residual power supply oscillations are quantified for all types of magnets.