

Optics Measurements, Corrections and Modeling for High-Performance Storage Rings



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Roman pots for beam diagnostics

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The physics programme of the TOTEM experiment requires the detection of very forward protons scattered by only a few microradians out of the LHC beams. Therefore, the experiment has inserted stacks of planar Silicon detectors in moveable near-beam telescopes (so called Roman Pots) located along the beam-line on both sides of the interaction point IP5. The precise knowledge of the LHC optics expressed by the beam transport matrices between the interaction point and the detectors' location is of the key importance for the proton kinematics reconstruction after the collision. The talk will report the optics measurements performed by the TOTEM experiment based on the proton tracks reconstructed in the Roman Pots and will summarize the estimated corrections of the LHC triplets of the IP5 sector for $\beta^*=3.5\text{m}$ fills.

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