

Abstract Submitted
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Fringe E-Fields of Flat and Cylindrical Deflectors in Electrostatic Charged Particle Storage Rings ERIC METODIEV, KEVIN HUANG, Harvard College, YANNIS SEMERTZIDIS, Center for Axion and Precision Physics Research, WILLIAM MORSE, Brookhaven National Laboratory — Analytic expressions for the potentials and fields of flat and cylindrical plates, including the fringe fields, are given. The analysis below extends and simplifies the current expression for the fields of flat plates and develops expressions for the fringe fields of cylindrical plates in terms of polar coordinates. The development of a FORTRAN program to output the field strength at a given location within the Proton Electric Dipole Moment (Proton EDM) ring is then described. Fourth-order Runge-Kutta integration is used to investigate the effect of fringe fields on particle and spin dynamics with precision tracking in the proposed Proton EDM experiment.

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