

FRINGE FIELD PROPERTIES IN MAGNETS WITH MULTIPOLE OR MID-PLANE SYMMETRY

G.I. Bell, D.T. Abell, Tech-X, Boulder, Colorado

Abstract

The design of an accelerator with a large energy acceptance requires careful consideration of fringe-field effects*. This applies particularly to the design of fixed-field alternating gradient (FFAG) accelerators. We consider magnets in straight and curved geometries, and with multipole or mid-plane symmetries. The longitudinal magnet profiles we consider include a simple hyperbolic tangent and a more realistic six-parameter Enge function. We show that when the fields are modeled using power series expansions in a transverse parameter, the domain of convergence is determined by the fringe-field decay length. We also demonstrate the use of these models in the tracking code PTC**.

**CONTRIBUTION NOT
RECEIVED**