

Abstract Submitted
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Computation of Transfer Maps from Surface Data with Applications to Wigglers CHAD MITCHELL, ALEX DRAGT, University of Maryland, College Park — Simulations indicate that the dynamic aperture of the proposed ILC Damping Rings is dictated primarily by the nonlinear properties of their wiggler transfer maps. Wiggler transfer maps in turn depend sensitively on fringe-field and high-multipole effects. Therefore it is important to have a detailed and realistic model of the interior magnetic field, including knowledge of high spatial derivatives. Modeling of these derivatives is made difficult by the presence of numerical noise. We describe how such information can be extracted reliably from 3-dimensional field data on a grid as provided, for example, by various 3-dimensional finite element field codes (OPERA-3d) available from Vector Fields. The key ingredients are the use of surface data and the smoothing property of the inverse Laplacian operator. We describe the advantages of fitting on an elliptic cylindrical surface surrounding the beam.

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