

Map Making: Cartography In Beam Physics

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The idea of having a high order map for a given cylindrical beam line element is quite desirable; however, to branch away from ideal multipole cases means using a general method to obtain this map from measured data. Usage of the Helmholtz theorem allows us to take measured surface data to generate expansions of the field about the beam particle axis which are then, in turn, used to create a flow expansion of the initial conditions through the beam element. Finally, a Poincare section can be made of this flow expansion to provide us with a high order map of the beam element.