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Design Optimization of Ferromagnetic Poles for a High Temperature Superconducting Bulk Undulator

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This work presents the modelling done to optimize the pole geometry to be used in the planned high temperature superconducting bulk undulator in PSI. The $H\text{-}\phi$ formulation is used to model the undulator field and the magnetic forces inside the poles. A T-shaped pole with a width of 10 mm and height of 8 mm was found to be optimal to maximize the peak undulator field. This model was also used to generate the data for the shimming algorithm.

Topic

Applications in large instruments such as high-field magnets, medical magnets and accelerator magnets

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