

EXPERIENCE WITH A NdFeB BASED 1 Tm DIPOLE

VALLER, KJELDSTEEN, BENDIXEN ET AL., 2014. 5TH INTERNATIONAL PARTICLE ACCELERATOR CONFERENCE

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A 30° Green Magnet based on permanent NdFeB magnets has been developed and installed in the injection line at the ASTRID2 synchrotron light source. The cost efficient design is optimized for a 1 T field at a length of 1 m using shaped iron poles to surpass the required field homogeneity. The inherent temperature dependence of NdFeB has been passively compensated to below 30 ppm/°C. A study of potential demagnetization effects has been performed by irradiation of NdFeB samples placed directly in a 100 MeV e-beam. A high permanent magnet work point was found to result in enhanced robustness, and the risk of demagnetization was found to be negligible for typical synchrotron applications. The magnet has successfully been in operation at ASTRID2 since autumn 2013.

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