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Tue-Mo-Po2.08-09 [62]: Magnetic Property of Praseodymium Permanent Magnet at Cryogenic Temperature

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Strong magnetic fields are demanded for advanced accelerators. As a cost-effective option other than HTS (High Temperature Superconductors), permanent magnets may be applied in the hybrid magnets to generate the strong magnetic field. One of the most promising permanent magnetic materials for the hybrid magnets is praseodymium permanent magnets (PrFeB). Although the remanent field of conventional NdFeB magnets decreases at 100 K due to spin reorientation. PrFeB magnets consisting of praseodymium (Pr) instead of neodymium (Nd) do not show such degradation and the coercivity of PrFeB at 100 K region is 7 T. In this study, magnetization curve, as a primary magnetic property of a PrFeB magnet sample was measured in the temperature range down to 4 K. Based on the experimental result, possibility of applications for accelerator magnets will be discussed.

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