

Design and Fabrication of Racetrack Coil Accelerator Magnets*, K. CHOW, D.R. DIETDERICH, S.A. GOURLAY, R. GUPTA, W. HARNDEN, A. LIETZKE, A.D. MCINTURFF, L. MORRISON, and R.M. SCANLAN, LBL - Most accelerator magnets for applications in the field range up to 9 T utilize NbTi superconductor and a cosine theta coil design. For fields above 9 T, it is necessary to use Nb₃Sn or other strain sensitive materials, and other coil geometries that are more compatible with these materials must be considered. This paper describes our recent efforts to design a series of racetrack coil magnets that will provide experimental verification of this alternative magnet design approach. In particular, a "common coil" design for a dual aperture dipole magnet with the goal of reaching a field level of 15 T, will be described. The experimental program, which consists of a series of steps leading to a high field accelerator quality magnet, will be presented. Fabrication of a racetrack dipole magnet utilizing Nb₃Sn superconductor and a wind and react approach will be presented.

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