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## Recent Work

**Title**

MAG High Field Superconducting Magnets

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**MAG High Field Superconducting Magnets\*** R.M.Scanlan

The post-SSC period has seen a renewed interest in high field dipole development, e.e., for fields greater than 10 T, which is the practical limit for NbTi superconductors. A number of groups have active programs in this area, including BNL, FNAL, KEK, LASA/INFN, LBNL, TAMU, and Twente U. Potential high energy physics applications for magnets in this field range include a Very Large Hadron Collider, a Muon Collider, or upgrades to the LHC. While most of these programs are in the early stages of development, several significant results have been demonstrated. These include the Twente U. dipole which reached 11.0 T in 1995 and the LBNL dipole which produced a world record dipole field of 13.5 T in 1997. While these two magnets were based on the cosine theta coil winding approach, much recent work has been focused on block coil designs which may be more compatible with the brittle superconductors and high Lorentz field stresses that are inherent to high field magnets. The new block designs include the "common coil" designs being explored at BNL and LBNL, as well as a segmented block design with reduced winding stresses at TAMU. In addition to magnet design work, several new superconductors are being developed for use in high field accelerator magnets. These include Nb<sub>3</sub>Al as well as the high temperature superconductors in both tape and cable configurations. The status of both magnet and conductor development for higher field accelerator magnets will be reviewed.

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