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## Magnetic and Structural Design of a 15 T Nb<sub>3</sub>Sn Accelerator Dipole Model

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Hadron Colliders (HC) are the most powerful discovery tools in modern high energy physics. A 100 TeV scale HC with a nominal operation field of at least 15 T is being considered for the post-LHC era. The choice of a 15 T nominal field requires using the Nb<sub>3</sub>Sn technology. Practical demonstration of this field level in an accelerator-quality magnet and substantial reduction of the magnet costs are the key conditions for realization of such a machine. FNAL has started the development of a 15 T Nb<sub>3</sub>Sn dipole demonstrator for a 100 TeV scale HC. The magnet design is based on 4-layer shell type coils, graded between the inner and outer layers to maximize the performance. The experience gained during the 11-T dipole R&D campaign is applied to different aspects of the magnet design. This paper describes the magnetic and structural designs and parameters of the 15 T Nb<sub>3</sub>Sn dipole and the steps towards the demonstration model.

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