Contribution ID: **112** Type: **Poster Presentation of 1h45m**

Design, fabrication and test of a 2 T superconducting dipole prototype by using tilted solenoids

Thursday, August 31, 2017 1:45 PM (1h 45m)

A novel scheme of the superconducting dipole magnet which superposes two concentric and oppositely titled solenoids with respect to the bore axis is described. A designed dipole magnet prototype consists of four tilted solenoids by using a 7-strands NbTi superconducting cable and will produce a 2 T magnetic field with operating current of 3 kA. The bore diameter is 50 mm. The detailed magnetic field design by the software of OPERA is presented. The fabrication and test of the magnet prototype are also reported in detail.

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Session Classification: Thu-Af-Po4.01

Track Classification: A1 - Superconducting Accelerator Magnets