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## **Thu-Mo-Po4.02-03 [9]: Preliminary Design of HEPdipo, a Nb<sub>3</sub>Sn Large Aperture Dipole Magnet for Cable and Insert Coil testing**

*Thursday, 26 September 2019 08:45 (2 hours)*

The HEPdipo magnet is being designed within a collaboration among CERN, EPFL-SPC, F4E and LBNL. The goal is to provide, with a background field of 15 T, the capability of testing insert coils and cables for high energy physics and fusion applications at variable temperature.

The target field of 15 T is generated at 4.2 K over a bore aperture of 144 mm × 94 mm and a length of about 1 m. The chosen technology is based on a bath cooled Rutherford cable and flared ends block-type coils pre-loaded using a bladder-and-key support structure. The design features three double-pancake coils with the same numbers of turns.

After the initial definition of the main parameters and a comparison between different coil layouts, in this paper we report on the status of the magnet design. In particular, 3D finite element magnetic and mechanical models are used to evaluate field profiles and peak stresses on coils and structure components. The results of the quench protection analysis are also described.

**Primary authors:** MARTINS ARAUJO, Douglas (CERN); FERRACIN, Paolo (CERN); BOTTURA, Luca (CERN); RAVAIOLI, Emmanuele (CERN); DE RIJK, Gijs (CERN); SARASOLA, Xabier (EPFL); BRUZZONE, Pierluigi (EPFL-SPC); CAU, Francesca (Fusion for Energy); PORTONE, Alfredo (Fusion For Energy/European Commission); RECCIA, Luigi (Fusion for Energy); TESTONI, Pietro (F4E); PRESTEMON, Soren (LBNL); SABBI, GianLuca (LBNL); Dr MINERVINI, Joseph (Massachusetts Institute of Technology)

**Presenter:** MARTINS ARAUJO, Douglas (CERN)

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