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EuroCirCol - blocks

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In the frame of the high field accelerator magnet design work package of EuroCirCol design study, three different layouts for double-aperture dipole magnets made of Nb3Sn conductors and providing a field of 16 T in a 50-mm aperture are being considered: block-coils, common-coils and cosine-theta. All options are being explored and will be compared based on the same assumptions, in particular in what regards the conductor performance, operating temperature and margin. This presentation concerns the block-option under development at CEA. After an exploratory phase of various block-coils possibilities (cable dimensions, number of layers, cable grading) the design converged to a four layer magnet. An internal grading, driven by a conductor saving and consisting in both a high and low field cables, is required. An electromagnetic analysis of the magnet cross-section in a 2-in-1 configuration is performed, coupled to a protection investigation. Preliminary results of the mechanical study ongoing are also presented.

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