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Quench calculations for the superconducting dipole magnet of the CBM experiment at FAIR

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The scientific mission of the Compressed Baryonic Matter (CBM) experiment is the study of the nuclear matter properties at the high baryonic densities in heavy ion collisions at the Facility of Antiproton and Ion Research (FAIR) in Darmstadt. The 5.15 MJ superconducting dipole magnet will be used in the silicon tracking system of the CBM detector. It provides a magnetic field integral of 1 Tm which is required to obtain a momentum resolution of 1% for the track reconstruction. The 3D quench calculations that determine the conductor design, coil design and the quench detection/protection system parameters will be presented.

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