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Magnetic-field measurements and preliminary modelling for the operation of the high-order corrector magnets for HL-LHC

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High-order corrector magnets will be required for the magnetic system of the HL-LHC inner triplets. These magnets are based on a superferric design thus the saturation of the iron poles affects the field generated in the aperture, i.e., the magnetic transfer function shows a nonlinearity. One of the challenges for the operations of these magnets is to find a suitable fit of the magnetic transfer function able to predict the field generated, given the current, within the acceptable level of 1%. In the LHC, the magnet operations rely on a magnetic field model (FiDeL) for deriving the current level from the required field strength. This paper presents a first iteration of the field modelling for the new high-order corrector magnets.

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Footnotes

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Yes

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