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Measurement of the field quality and repeatability on the first Q2 magnets for HL-LHC

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The Q2 insertion quadrupoles for the HL-LHC upgrade of the LHC are currently being produced and tested. The test of the first units provides valuable information about the static and dynamic field quality of superconducting accelerator magnets built from Nb₃Sn coils. This paper presents the results of the magnetic measurements performed on the prototype and series magnets from the point of view of field quality and field repeatability, effects from flux-jumps and persistent currents, magnetic axis, and alignment. It also gives an outlook on the possible impact on the beam dynamics and on the field description for operation.

Footnotes

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