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Development of MQYY: a 90 mm NbTi double-aperture quadrupole magnet for HL-LHC

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In the context of the HL-LHC project, a NbTi double aperture quadrupole magnet called MQYY is being developed. This 90 mm aperture quadrupole magnet has a magnetic length of 3.67 m and an operating gradient of 120 T/m at 1.9 K. Its development is done along two parallel paths: 1) the design, fabrication and test of a short model, 2) the design and fabrication of two full scale prototypes in industry within the H2020 EU Pre-Commercial Procurement project QUACO implemented by CERN, CEA, CIEMAT and NCBJ. We report here on the short-model design choices, the status of its fabrication and the preparation of the tests. In particular, we describe the magnetic and mechanical design relying on self-supporting collars, the protection aspects and the assembly process. In addition, we present the unusual scheme of the QUACO project leading to the prototypes fabrication.
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