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Wed-Mo-Or10-02: Performance of the Optimized Mechanical Design of the CLIC Main Beam Quadrupole Magnet Prototype

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The Main Beam Quadrupole (MBQ) magnets of CLIC, the Compact Linear Collider under study at CERN Laboratory in Geneva, are part of a critical magnet family, considering the industrial production challenges. An R&D program on the MBQ magnets was launched for studying and investigating several assembly solutions in order to minimize the procurement cost of a large series of magnets comprising more than 4000 units. In this paper, the performance of the latest configuration is presented comparing the results of magnetic measurements with previous magnet model variants. Innovative solutions for an efficient and fast fiducialization and alignment of the MBQ quadrupoles were also studied and developed inside the PACMAN Project, a CERN project supported by the European Union via the 7th Framework Programme “Marie Curie actions”. The advantages of the mechanical design of the iron yoke and of the assembly and alignment procedures are presented and discussed.

Primary authors: MODENA, Michele (CERN); Dr PETRONE, Carlo (CERN)

Presenter: MODENA, Michele (CERN)

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