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Design and Manufacture of two High Gradient Quadrupoles based on Permanent Magnets for the Antiproton Decelerator

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In the framework of the consolidation of the Antiproton Decelerator (AD) Target Area it was decided to replace the two original normal conducting quadrupoles used for the final focussing of the proton beam before the target by two 1-m-long quadrupoles based on permanent magnet technology. Their gradient is adjustable from 35 to 45 T/m inside an aperture of 60 mm in diameter. This paper describes the design, manufacture, assembly and magnetic measurements results of these high gradient quadrupoles.

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