

Progress in the Development of the One-Metre Model of the 70 mm Aperture Quadrupole for the LHC Low-b Insertions, S.R. MILWARD, S. NOBES, K.D. SMITH, A.J. STREET, M.C. TOWNSEND, J.R. TREADGOLD and J.M. WIATRZYK, Oxford Instruments, Oxfordshire, OX8 1TH, England; G.A. KIRBY, R. OSTOJIC, J. STRAIT* and T.M. TAYLOR, CERN, AT Division, 1211 Geneva 23, Switzerland - Within the LHC magnet development program, Oxford Instruments has built a one metre model of the 70 mm aperture low-b quadrupole. The magnet features a four layer coil wound from two 8.2 mm wide graded NbTi cables, and is designed for 250 T/m at 1.9 K. The magnet was initially tested at 4.5 K, and reached its short sample limit¹. In this paper we review the second cryogenic test, subsequent magnet rebuild and the third cryogenic test. Results on the mechanical behaviour of the magnet during cool down and powering, and magnetic performance at 4.5 K are presented along with the results of testing at superfluid helium temperatures.

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1 S.Nobes et al., Proc. Int. Conf. Magnet Technology, MT-14, Tampere, Finland, June 1995.