

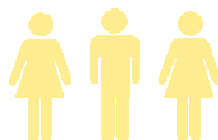
SEMINAIRE SACM

23

Mars 2007

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Superconducting quadrupole magnets for the LHC low-beta insertions



Superconducting quadrupole magnets, MQXA, for the inner triplets of the four LHC low-beta insertions have been developed at KEK. The design field gradient was 240 T/m in a coil aperture of 70 mm at 1.9 K with superfluid helium cooling. The magnetic length is 6.37 m. The magnets are required to provide the nominal field gradient of 215 T/m reliably with radiation heat deposition in the coils of 5 W/m. The magnet design features four layer coils accurately positioned by thin high-Mn steel spacer-collars and mechanically supported by the keyed yoke made of fine-blanked iron laminations.

In order to confirm the design five 1-m model magnets were fabricated and tested at KEK in-house. Prior to the production run, two full-scale prototypes were fabricated to confirm the technology transfer to industry. Twenty production magnets including four spares have been built in industry and tested at KEK.

The design, fabrication and performance of MQXA magnets will be presented as well as an overview of the other insertion region magnets for the LHC, including the current status of the construction.

The recent scientific activities of the Cryogenics Science Center at KEK will be briefly introduced in the beginning of the talk.



NB : La présentation d'une carte d'identité ou d'un passeport est exigée à l'entrée du centre .
Tous les auditeurs extérieurs sont priés de prévenir à l'avance de leur visite : Geneviève
VERON, Tél. : 01 69 08 69 49 (UE : délai de 24h, hors UE : délai de 4 jours) .

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