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Test of Coils for Superbend - A 6.3 T Bend Magnet for the ALS

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Superbend is a 6 T dipole designed to replace three of the 36 conventional 1.5 T dipoles at the ALS (Advanced Light Source) 6 KeV to produce synchrotron light with 1.9 GeV electrons. Prototype racetrack-shaped pole-face coils were manufactured and tested. The design is unique in that space constraints do not permit a support structure on the gap side of the coils they must be operated in a vacuum and cooled by conduction. The coil pair is tested in a dummy iron yoke in a vacuum environment. Coils are wound with Kapton-insulated single-strand .808 mm dia and .648 mm dia "SSC" superconductor and vacuum impregnated. Coil cross-section is 65 mm x 65 mm; the rectangular iron pole is 112 x 190 mm, and the gap between coils is 94 mm. Design field is 6.0 T on axis and 7.6 T at the conductor. Test results are presented.

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