

A 5BA low emittance lattice with superbends for Sirius

We present the lattice design issues of the new Brazilian synchrotron light source (Sirius) currently under construction at the Brazilian Synchrotron Light Laboratory (LNS) in Campinas. The Sirius lattice was recently revised to achieve a lower emittance. The new design is based on a 3 GeV, 5BA achromatic lattice with 0.28 nm.rad natural emittance without wigglers. The circumference is 518 m with 20 straight sections of alternating 6 and 7 meters in length. The dipoles will be based on the use of permanent magnet technology and will combine low field magnets (0.6 T) for the main beam deflection with a short 2 Tesla high field slice magnet (superbend) integrated in the center dipole. This will produce a longitudinal dipole gradient that is used to lower the emittance as well as to provide hard x-ray sources with a modest total energy loss.

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