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Recent developments of orbit control and stability at the SIRIUS storage ring

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SIRIUS is the 4th generation synchrotron light source of the Brazilian Synchrotron Light Laboratory (LNLS). Its storage ring has a world-leading orbit stability of 2/4% of the horizontal/vertical beam size at all beamline source points, integrated in the bandwidth from 0.1Hz to 1kHz. This achievement is strongly dependent on the performance of the fast orbit feedback system (FOFB), that has a measured 0 dB crossover frequency of 1kHz. In the last year, several developments on orbit control have been implemented, which contributed to further improvements on stability. This work will discuss such measures, which includes the development of a feed-forward scheme to compensate the effect of the booster ramp, the mitigation of the main perturbation source of the power grid and the decoupling of the FOFB and the low-level rf (LLRF) feedback systems.

Footnotes

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