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Emittance growth studies due to Crab Cavity induced amplitude noise in the SPS

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In the context of the HL-LHC upgrade, RF Crab Cavities (CCs) are one of the key components. Due to the increased intensity, the collider will operate with a large crossing angle scheme and these CCs will be used to counteract the geometrical reduction factor coming from the crossing angle. Amplitude and phase noise injected from the Low-Level RF, are known to induce transverse bunch emittance growth. This contribution presents the latest measurements of emittance growth induced by amplitude noise. The measurement was performed thanks to the SPS Beam Synchrotron Radiation Telescope (BSRT), that has been used to characterize the evolution of the transverse distributions. The measured emittance growth was found to be dependent on the amplitude detuning induced by the SPS octupoles, although no dependence was predicted by the available theories and models. In this paper, the measurement results will be presented and discussed.

Footnotes

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