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Head-tail mode zero instability growth rate studies in the CERN SPS

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The growth rate of the Head-Tail mode 0 instability is related to the real part of the transverse beam coupling impedance. The SPS transverse impedance model, which includes the major impedance contributions in the machine, can be benchmarked through measurements of growth rates as a function of chromaticity. This paper summarizes the methodology established to explore a wider range of chromatic frequency shifts, and presents the measurements performed after the LHC Injectors Upgrade (LIU) for two sets of machine optics: nominal and low gamma transition. The measurements are compared with the current Impedance model to further study its degree of accuracy.

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Footnotes

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Yes

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