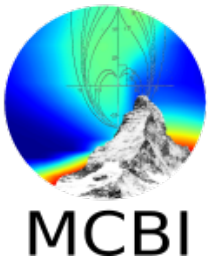

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Interplay of transverse damper and head-tail instability

Thursday 26 September 2019 10:40 (25 minutes)

Transverse head-tail instability is a major limitation of a single-bunch beam current in circular accelerators. Beam-based feedback is now a commonly used tool to suppress the instability. The feedback systems (transverse dampers) provide active suppression of the beam oscillations by electromagnetic fields, the amplitude of which is calculated in real time from the measured beam position. Applicability and efficiency of the transverse dampers are analyzed. The processes of excitation and damping of the instability are studied including chromatic and nonlinear effects. Analytical formulae of the mode-coupling theory are compared with numerical simulations and experimental results.

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