

Long-Term Stability in Hadron Colliders in Presence of Synchrotron Oscillations and Tune Ripple, W. SCANDALE, CERN; E. TODESCO, University of Bologna - The single-particle betatron motion is analysed in hadron colliders dominated by field-shape imperfections, like the CERN-LHC with injection optics. The aim is to evaluate the effect of tune ripple and momentum deviation on long-term stability. An empirical formula with three free parameters is proposed to interpolate the dynamic aperture versus the number of revolutions. The dynamic aperture turns out to decay with a power of the inverse logarithm of the stability time. Tracking data fit well with the empirical formula and extrapolation by at least one order of magnitude in the stability time is shown to be reliable.