

Longitudinal Coupled-Bunch Beam Feedback System in the UNK, S. IVANOV, A. MALOVITSKY, IHEP, Protvino - To damp longitudinal injection errors and ensure better stability against coupled-bunch lower-order odd multipole instabilities in the UNK proton synchrotron a band-pass coupled-bunch beam feedback near RF is proposed, its bandwidth exceeding a revolution frequency. Employment of a pair of over-coupled RF cavities driven in quadrature to the net accelerating voltage as its acting device is foreseen. A frequency-domain impedance treatment is applied to find feasible beam stability safety margins and damping rates of injection transients. The problem of control over longitudinal emittance growth is studied in time domain with a macroparticle tracking. Being employed together with an RF feedback around power amplifiers driving accelerating cavities, the beam feedback proposed is shown to yield beam parameters which comply with the UNK Project's requirements.