

Study of Emittance Blow-Up Sources Between the PS Booster and the 26 GeV PS, A. JANSSON, M. LINDROOS, M. MARTINI, CERN - The tight transverse emittance budget for the bright beams foreseen for the LHC era demands that all sources of emittance blow-up in the injector chain are reduced to a minimum. A critical region is the transfer between the PS Booster (PSB) and the 26 GeV PS. The four rings of the PSB run in RF harmonic one, and for the LHC beam the PS will be filled with eight bunches originating from two consecutive PSB cycles. Thus, each bunch will be different and has to be individually treated. The present recombination scheme introduces an important difference in Twiss parameters between the bunches from different rings. The difference between the bunches would, if left uncorrected, result in a substantial emittance blow-up. Several possible improvements of the recombination stage have been studied, including magnet shims, correction quadrupoles and a RF quadrupole magnet. To complement the theoretical studies, the actual contribution of mismatch and missteering to the emittance blow-up have been measured using a LHC-type beam, measuring the actual emittance in the PS with a wire-grid and fast wire-scanners. Results of the calculation and the measurements will be discussed and a strategy to minimise the blow-up will be indicated.