

GLOBAL ORBIT FEEDBACK SYSTEM FOR THE SLS STORAGE RING

M. Böge, Paul Scherrer Institut; M. Dehler, Paul Scherrer Institut; T. Schilcher, Paul Scherrer Institut; V. Schlott, Paul Scherrer Institut; R. Ursic, Paul Scherrer Institut

Experiments at the SLS require a highly stabilized photon beam spot with high brilliance. In order to achieve this goal orbit oscillations due to ground motion amplified by girder resonances have to be reduced. The beam motion has to be kept below 1 μm at the insertion devices. A fast closed orbit feedback will be implemented to suppress these oscillations over a frequency range of up to 100 Hz. Digital signal processors will read the digitized beam positions and apply the data to a feedback algorithm using singular value decomposition and PID controller algorithms. The computing power of the global orbit feedback system is distributed around the storage ring and therefore requires data exchange of beam positions from one sector to the other with high speed. Theoretical studies on the feedback loop have shown that a sampling rate of 4 kS/sec is needed. The proposed layout of the global orbit feedback system will be presented.