

Applications of Beam Diagnostic System at the VEPP-4 Complex, A.S. KALININ, V.A. KISELEV, D.N. SHATILOV, E.A. SIMONOV, V.V. SMALUK, BINP, Novosibirsk, Russia - Advanced applications of the beam diagnostic system¹ based on a turn-by-turn processing of the electrostatic pickup signals, are described. A procedure of beam injection optimization, based on analysis of injected beam parameters, was developed. Beta function is obtained by measuring amplitude of free coherent betatron oscillations, to increase the accuracy, betatron phase advance, which can be measured more precisely than amplitude, is used. To research dynamic aperture, a technique for betatron motion observation on phase space diagram, using a single pickup, was developed. Computer simulation of this technique in the case of non-linear betatron oscillations, and experimental results obtained, are described. The diagnostic system is applied too for high resolution low frequency beam vibration measurement, the results of which are presented.

1 See the report: A Beam Diagnostic System for Storage Rings, A.S. Kalinin, D.N. Shatilov, E.A. Simonov, V.V. Smaluk, BINP, Novosibirsk, Russia.