A Precision Io Monitor System at the SRRC

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Abstract

The intensity monitor (Io) system is used to monitor the beam stability at the SRRC. It includes a reflection mirror, a pinhole, a photon detector, and a precision water-cooling system. The beam stability will be increased to $\Delta I/I=0.1\%$. The mechanical stability of the system should be on the order of 0.1 μm. This study considers the vibration and thermal deformation problems of the entire system. The vibration and deformation of the mirror chamber were isolated using an independent manipulator [1]. The thermal effect of the beam was reduced by the Invar material and precision water-cooling system. The beam was scanned using a 0.1-μm resolution micro-stepping motor system.

Keywords: Io monitor, mechanical stability

Presentation: Poster

[1] D.J. Wang, T.C. Tseng, S.Y. Perng, C. K. Kuan, J.R. Chen, C.T. Chen, "A compact mirror manipulator in the SRRC beamline," J. Synch. Rad. 5 (1998) 801-803.