

Design of a Schottky-Signal Detector for Use at the RHIC Collider*, W. BARRY and J.N. CORLETT, D.A. GOLDBERG, LBNL - We report on the design for a Schottky detector for RHIC in the form of a resonant cavity. The cavity is similar to the one previously constructed for the Fermilab Tevatron [1] which was used in the successful detection of Schottky signals [2], but differs slightly in its design, and more significantly in its implementation. In particular, the cavity will be used to detect both longitudinal and transverse signals (the latter via the TM111 mode), and, through the use of improved signal-analyzer capabilities, we will be able to look directly at the 2 MHz second IF, rather than having to convert the signal to baseband, a feature which give greater flexibility, relax the absolute temperature-regulation of the cavity, and is indeed almost a necessity given the 79 kHz width and frequency-variability of the Schottky bands. In addition to the design, we present results of measurements of the cavity properties.

* Supported by Director, OER, U.S.D.O.E. under contract DE-AC03-76SF00098

[1] D.A. Goldberg et al, "A High-Frequency Schottky Detector for Use in the Tevatron," Proc. 1987 U.S.P.A.C., p. 547

[2] D.A. Goldberg and G.R. Lambertson, "Successful Observation of Schottky Signals at the Tevatron Collider," in Proc. 14th Int'l Conf. on High Energy Accelerators, p. 959