REPORT ON THE HIGH RESOLUTION SPECTROMETER AT PEP

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Abstract

A report on the High Resolution Spectrometer at PEP is presented. The detector is presently collecting data at PEP. The first data analysis indicates that all design criteria have been met.

The HRS detector has now been running for more than one year at PEP. The data collected during the spring run in 1982 corresponded to an integrated luminosity of 23 pb\(^{-1}\). For the 1982–83 period that integrated luminosity has already been exceeded in Feb., 1983. We expect to obtain more than 100 pb\(^{-1}\) for this period. PEP operation has improved dramatically since the beginning of 1983. The PEP energy has remained at 14.5 GeV per beam and integrated luminosities of up to 1 pb\(^{-1}\)/day are now being recorded. The HRS operation has been very reliable. We have logged more than 90% of the delivered luminosity.

A view of the HRS detector is shown in Fig. 1. In Fig. 2 details of the internal detector can be seen: central drift chamber, barrel shower counter, outer drift chambers, Cerenkov counters, and end cap shower counters.

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* Work supported by the U.S. Department of Energy.
The HRS detector is a general purpose solenoidal detector that has full neutral coverage and a large 2 meter radius tracking volume with a 16KG magnetic field. To enhance the momentum and invariant mass resolution the amount of material traversed by particles emerging from the interaction area is less than 1% $X_0$. The Beryllium beam pipe is 1.4 mm in thickness while the inner cylinder of the central drift chamber is 1 mm Beryllium. In fact, the principle material seen by the outgoing particles is the AR-CO$_2$ gas in the central drift chamber.