Universidade de São Paulo

Instituto de Física

Development and Application of a new device, the Silicon Drift Detector, for the STAR project

Jun Takahashi

Thesis submitted to the Physics Institute of the São Paulo University for the degree of Doctor in Science.

Professors:

Prof. Dr. Rene Bellwied, Wayne State University, MI, USA

Prof. Dr. Alejandro Szanto de Toledo, Univ. de São Paulo, SP, Brazil

São Paulo

1998

Summary

A Silicon Drift Detector is a novel state of the art position sensing device that combines the best features of gas drift chambers with the advantages of a semiconductor detector. In this thesis, I describe the design development and application of a large area linear Silicon Drift Detector, developed for use in the STAR experiment at the Relativistic Heavy Ion Collider (RHIC). Detector characteristics and performance are documented with results from laboratory tests and from measurements in experiment E896 at the AGS at Brookhaven National Laboratory.

Table of Contents