

Abstract

The silicon pixel tracking system for the ATLAS experiment at the Large Hadron Collider is described in this paper. The performance requirements are summarized. The principal design choices for the overall pixel detector are presented. The design and implementation of the elements of the pixel electronics systems are described in detail. The silicon sensor design and fabrication, as well as the design, assembly and testing of pixel modules is given here. Data obtained with test beams and from cosmic rays are presented. A brief summary of the pixel mechanical systems and electrical and cooling services is given.