The Tevatron Collider Experiment Upgrades

C. Pagliarone
I.N.F.N. of Pisa
via Livornese, 1291 - 56010 S. Piero a Grado (PI) - ITALY
E-mail: pagliarone@fnal.gov

Abstract

The Collider Detector at Fermilab (CDF) and the D0 Experiment are multi-purpose particle physics experiments dedicated to the study of proton-antiproton collisions at the Fermilab Tevatron collider. CDF was designed, built and operated by a team of physicists, technicians and engineers that now spans 44 institutions and includes, approximately, more than 500 members. The history of the experiment goes back over 20 years. The D0 detector has a younger history. Both the experiments have been recently upgraded in order to be able to operate at the high radiation and high crossing rate of the Run II Tevatron environment. In addition, there have been several upgrades to improve the sensitivity of both the detectors to specific physics tasks such as heavy flavor physics, Higgs boson searches and many others. In this paper we summarize the detector upgrades describing in particular the concept and the performance of the new silicon tracking systems, the new central outer detectors, and the renewed data acquisition system. Complex Trigger systems have been realized to allow better signal over background rejection. Both the Tevatron Experiments are now taking data.