

A High Level Online Tracking Trigger for the STAR experiment at RHIC

In order to utilize the high luminosity provided by RHIC and the enhanced data acquisition capability of STAR, a High Level online tracking Trigger (HLT) is being developed to effectively study the properties of the QGP created at RHIC. Based on the fast tracking and event assembling, the STAR HLT can select events of great physics interest online, which will reduce the rate to tape as well as the time of offline processing. In year 2010, the HLT has successfully selected events for J/psi elliptic flow study and anti-alpha search. It has also been used to monitor the fraction of clean collisions over background collisions during RHIC's Beam Energy Scan program. We will present the architecture, methods and performance of the STAR HLT. Future developments on accelerating the online reconstruction of exotic decay topologies by Graphic Processing Unit will also be presented.

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