Contribution ID: **363**   Type: **presentation**

EventDB: an event indexer and caching system for BESIII experiment

Tuesday 10 July 2018 12:15 (15 minutes)

Beijing Spectrometer (BESIII) experiment has produced hundreds of billions of events. It has collected the world's largest data samples of J/ψ, $\psi(3686)$, $\psi(3770)$ and $\psi(4040)$ decays. The typical branching fractions for interesting physics channels are of the order of $O(10^{-3})$. The traditional event-wise accessing of BOSS (Bes Offline Software System) is not effective for the selective accessing with the rate of $O(10^{-3})$. We proposed and implemented an event indexer system - EventDB, which extracts the characteristics of all of events and stores them in hbase. Currently, the characteristics contain 22 variables including BeamEnergy, NTracks, NShowers, BeamVx, BeamVy, BeamVz and so on. We adopted inverted index technologies to store event index in hbase, and the index count is less than 1/1000 of event count. We also puts real event data into hbase for hot events caching to accelerate event access. After using EventDB, the data analysis workflow of BESIII experiment is changed as follows: the analysis program firstly queries the corresponding event index from database, then get event data from database if the event is cached, or get data from DST file using ROOT framework if it is not cached. Finally, the test results on one billion dataset showed the query speed was improved more than 10 times.

Author: CHENG, Yaodong (Chinese Academy of Sciences (CN))

Presenter: CHENG, Yaodong (Chinese Academy of Sciences (CN))

Session Classification: T4 - Data handling

Track Classification: Track 4 - Data Handling