
1. Babar A to Z software web page - Revision 2 using Job Submission Prototype.

Version 1 was the first attempt to run Babar, and because I was installing alone, there was some unusual configuration. I reviewed the installation myself, new modules were developed and submitted using job submission system, and a new revision is available. This is a step forward of Monte Carlo Data Challenge, where independent processes generate events in independent files. I am using the same dataset with several processes reading and writing results in the same NFS directory.

Some submission numbers:

a. Histograms for quality assurance: 18,700,000 events in 20 hours.
b. Ntuples (row and column): few thousand events because I do not have use for it.
c. Event generation using Monte Carlo: 600,000 events for particle identification using artificial intelligence (project in development).
d. Development of recursive combinatory algorithm to reconstruct 80,000,000 events with 5,000 combinations/event in 4 days to study Pi-zero, eta, eta-prime decays from tau (with/without cuts), q-qbar annihilation, and collective vibration states. This project will be the proof-of-concept for grid computing, and it is a very good choice because branch rates vary from 25% to 0.00001%, which justify the necessity of million events to obtain a hill and several attempts to find the suitable cuts. Development of a new algorithm using tag muons, tracked particles, and pi-zeros to identify events from the reactions tau -> pi (n pi-zero) tau-neutrino (where n=1,2,3,4) and tau -> pi (n eta) tau-neutrino (n=1,2) will allow me to reduce the background.

2. Defining a quality assurance systematic:

Quality assurance developed at Babar fails to use the most evident physical law. The conservation of mass obtained from Momentum per Energy bi-parametric plot represents a guarantee that data, calibration, conditions and configuration database, software libraries, Babar software releases, grid software and operating systems are set in the same condition as SLAC (the central repository). To run the software over all datasets it is mandatory to use the Job Submission System and grid.

3. Kaons/Pions discrimination.

The use of momentum per energy histogram allows me understand Electromagnetic Calorimeter resolution and is helping me to develop an artificial intelligence algorithm to discriminate kaons and pions. This study uses job submission prototype to generate histograms. Each histogram contains 18,700,000 events from real data which takes 7 days in a usual computer and ONLY 20 hours in grid test bed (shared with other users). Only few thousand events were used from Monte Carlo simulation.

4. Bottlenecks to use Grid LCG2 in real world production.

Babar Steering Committee release me from my project coordination, and I am no longer caring about grid installation or configuration, and tier 2 architecture. My duties were restricted to job submission of analysis programs in grid only, which is working and giving interesting results.

5. Description of analysis job submission.
This task was not performed yet because I have been asking for 3 months Storage Element and RLS resources to integrate with job submission prototype and test the feasibility of my proposal. I can not write a report proposing and describing something I am not sure if it works.

6. Other Activities.

   a. Post Graduate in CLTHE.
   b. C Programming Laboratory for first year.
   c. Attending Fred’s Particle Physics course.
   d. Attended Jenny’s Babar Course.