

HELEN Project

Report

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The approved project was for the month of February 2006, but could only be implemented this month of July. This implied in a change of foreseen activities. Although some work have been done on the analysis of the B^0 rare decay $B^0 \rightarrow K^{*0} \mu^+ \mu^-$, the emphasis was on the Online monitoring software.

Regarding the decay $B^0 \rightarrow K^{*0} \mu^+ \mu^-$, there was a discussion on the ongoing analysis being made by Jeremy Dickens and of the tasks priorities for the coming months, with Ulrik Egede, the convener of the Rare Decays Working Group. We concluded that, besides continuing to follow the DC06 (LHCb Data Challenge 2006) activities in what concerns the inclusive di-muon pre-selection, I should start looking at the di-electron counterpart. The decay $B^0 \rightarrow K^{*0} e^+ e^-$ could allow an increased statistics in the measurements of some important observables where it can be combined to the di-muon channel and, as well, provide hint for new physics phenomena if its behavior is unexpectedly different from this di-muon channel, as predicted by some theories. As a consequence I have adapted the di-muon software to look at the di-electrons and prepared an ntuple to start the analysis. I am starting to look at the reconstruction and particle identification efficiencies and to the relevant resolutions (p_T , p , mass,...)

Regarding the activities on the Online monitoring software, we re-discussed the way the histogram monitoring services were implemented. It used a DIM rpc service, which depends on the client asking the necessary information every time it wants, which implies extra communications and delays. This can be a problem when you are managing hundreds of process. We decided to re-implement it as a DIM service, where the server updates the information at regular time intervals, and the client simply get this information.

I re-implemented the histogram monitoring service (server side) in the above way and adapted the simple Root viewer for these histogram (client side), and also made some other improvements in these programs. These changes triggered new versions of the packages Online/Gauche and Online/Viewer, which together with other updated packages was released as a new OnlineSys version v2r0. Some improvements are still foreseen and the goal is to use this monitoring software in the RICH forthcoming test beam, planned for 18 September. This will be a great opportunity to test this software, still in development phase, in a concrete environment and see how it performs and what improvements are needed. This work was done in collaboration with Eric Van Herwijnen, Beat Jost, Ulrich Kerzel, Clara Gaspar and Monica Pepe-Altarelli.