Subject: eta_c generation with EvtGen
Posted by Dima Melnychuk on Thu, 01 Dec 2011 11:44:57 GMT
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Dear all,

I found one conceptual problem with eta_c event generation which was due to my misunderstanding of EvtGen event generator.

Namely in eta_c produced in p+pbar in formation experiment scan will be performed at several energies around resonance and what it does make sense to study for tracking TDR is one momentum point corresponding to resonance maximum. And here a shape of eta_c resonance should not be considered at all. At least it is my understanding and in this way the studies were done for example for physics book.

But producing eta_c with
PndEvtGenDirect *EvtGen = new PndEvtGenDirect("etac","EtaCInclusive_2phi.dec");
eta_c was taken on different positions of resonance.

Here PndEvtGenDirect behave a little bit strange, namely for one run or one seed of random number generator it takes one fixed mass. And when I generated 1000 eta_c locally with one seed I had as a result for efficiency which was different from efficiency obtained on grid, and as Stefano observed last time eta_c width for 1000 events was 2 times smaller than on grid because it was for one fixed point, whereas on the grid it was averaged over resonance shape.

So I updated run_sim_stt_evt.C for
PndEvtGenDirect *EvtGen = new
PndEvtGenDirect("pbarpSystem","EtaCInclusive_2phi.dec",3.6772);

and in decay file EtaCInclusive_2phi.dec
I replaced etac for pbarpSystem

So at least it's my understanding how it should be done.

So event generation how it was done y now was not incorrect but it was not I supposed its was.

Particularly applying 4C-fit makes sense for fixed pbar momentum for each point of resonance scan.

So, any opinion?

And if there are no objections I would like to ask Stefano to generate once again data on grid. It will require update of run_sim_stt_evt.C and EtaCInclusive_2phi.dec and in principle do not require update of pandaroot on grid (but will require modification of script for data production).

Situation is the same for psi(3770) but this problem is NOT related to multipion channel.

Best regards,

Dima