Software Update

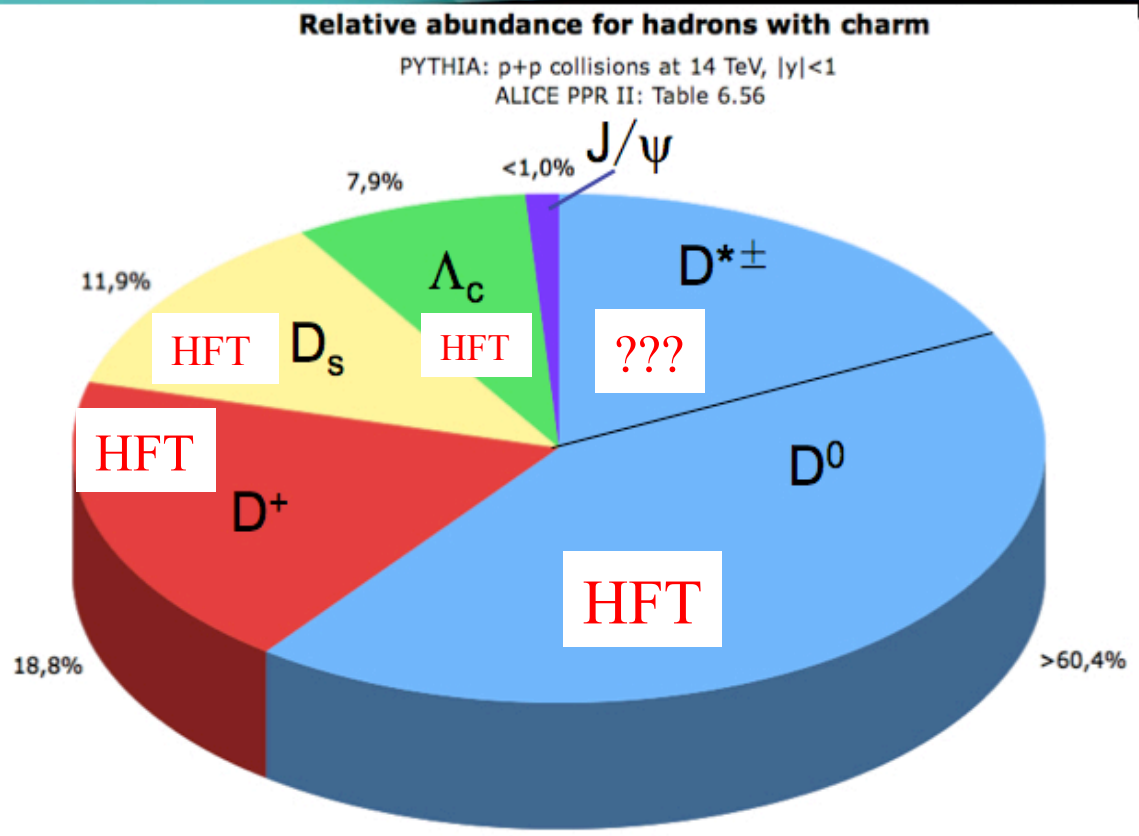
(since BNL TC meeting, 14 October 2010)

S. Margetis, KSU

Content

- Software group to change focus after CD2/3
  - Physics simulations/analysis moves to Heavy Flavor
  - Our group/meetings to focus on completing soft. Tasks
- Simulations Updates, ie getting ready for CD2/3
  - B->J/Ψ
  - Ds -> $\Phi+\pi$ -> KKπ
  - D+ -> K$\pi\pi$
  - D* -> $D^0+\pi$
- Progress on WBS, Schedule and Resources

Where does all the charm go?



open charm measurement in ALICE:

- $D^0 \rightarrow K^- \pi^+$
- $D^0 \rightarrow K^- \pi^+ \pi^+ \pi^-$
- $D^{*+} \rightarrow D^0 \pi^+$
- $D^+ \rightarrow K^- \pi^+ \pi^+$
- $D_s^+ \rightarrow K^+ K^- \pi^+$
- $\Lambda_c^+ \rightarrow p K^- \pi^+$
- $\Lambda_c^+ \rightarrow \Lambda \pi+$
- $\Lambda_c^+ \rightarrow p K_s^0$

R. Bala's talk

… …

- Measure open-charm mesons, e.g. D^0 and D^* to address:

  (a) total charm production in pp and AA

  (b) heavy-quark collectivity in AA

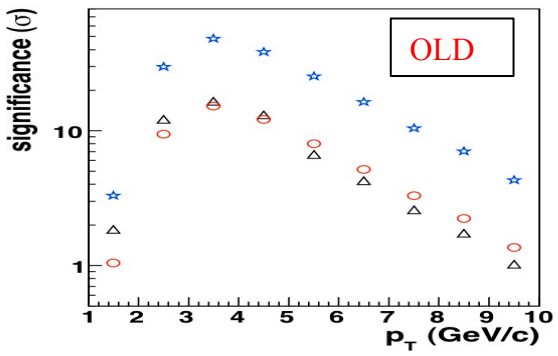
B -> J/ψ + K -> (μ+μ) + K

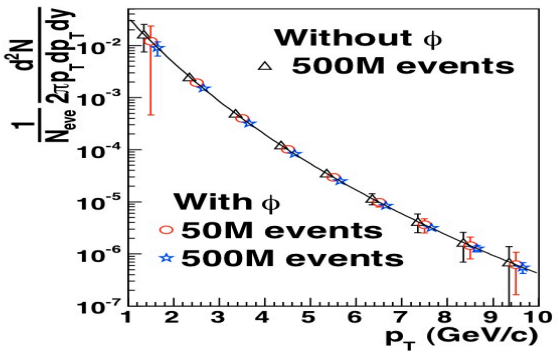
- Work in progress
- Expect to have some estimates (perhaps plots) to show at the CD2/3 review
  - Hand calculations are encouraging

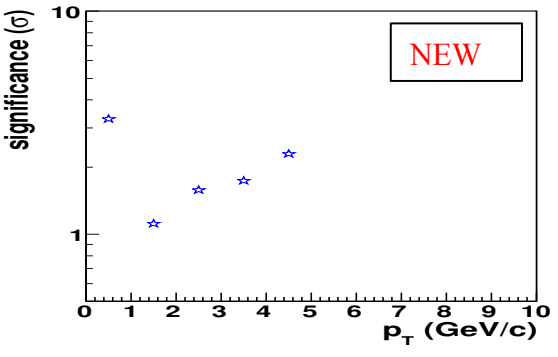
$D^* \rightarrow D^0 + \pi$

- Setting up production
- Purdue volunteered to look at it
- Xin has experience from his D* analysis in p+p
- Hope to have something for CD2/3

Ds -> Φ+π -> KKπ







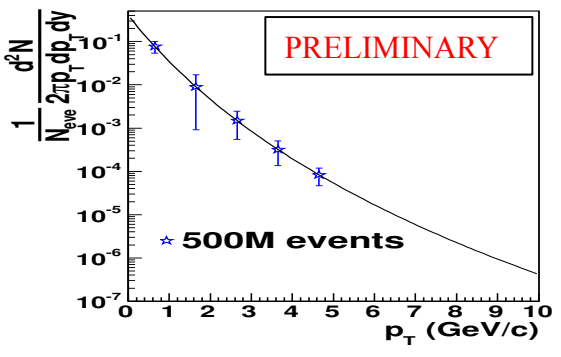
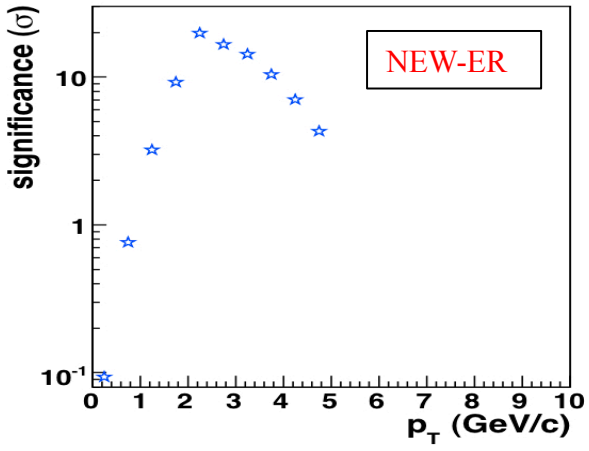
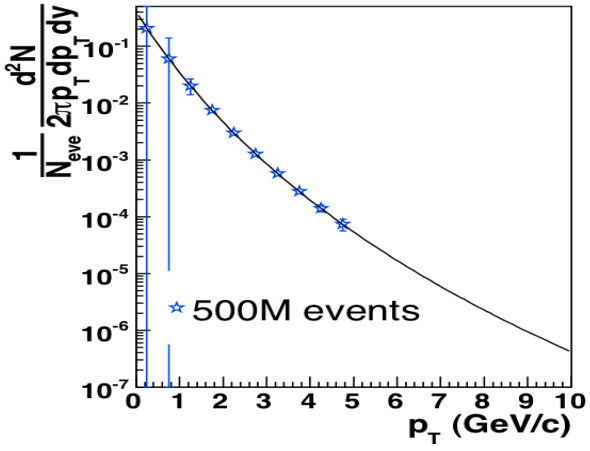


FIG. 1: The simulation results of the D_s reconstruction from $D_s \rightarrow \phi + \pi \rightarrow K^+ + K^- + \pi$ decay channel.



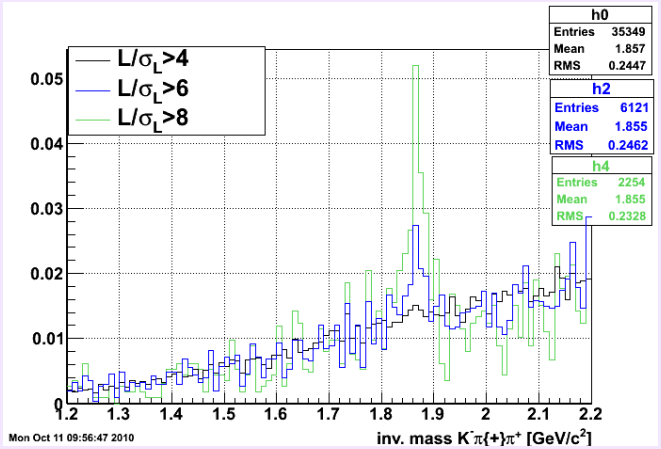


NEW for CD2/3

- New, simple DCA cuts improved significance…still work in progress
- High pt region needs new dedicated production
- Older analysis w/out Phi mass cut is going to be revisited

$D^+ \rightarrow K\pi\pi$

NEW for CD2/3



- Jonathan continues working on his Kalman paradigm on the 3-body decay of D+
- A student from Prague spent a month with him learning the method…he plans to apply it in Λ_C analysis.
  - This is a good way to go.
  - The D* analysis (Purdue) is another upcoming example

Need

- Optimization for D+
- Apples to apples comparison (as much as possible) of D^0 efficiencies with non-fitting methods (eg Yifei)

WBS 1.6 (Software): Schedule (Template)

1.6 Software

ID	Task-name	Duration	Begin-Date	Predecessors	Resources[1]
1.6.1	**Hit Reconstruction**	**24 months**	**09/01/2011**		**3.0 FTE**
1.6.1.1	PIXEL Hit Reconstruction	24 months	09/01/2011		1.5 FTE
1.6.1.1.1	Develop/Test	6 months	09/01/2011	1.6.7.1	
1.6.1.1.2	Evaluate/Tune	4 months	09/01/2011	1.6.7.1	
1.6.1.2	IST Hit Reconstruction	24 months	09/01/2011		0.5 FTE
1.6.1.2.1	Develop/Test /Eval.	6 months	09/01/2012	1.6.7.2	
1.6.1.3	SSD Hit Reconstruction	24 months	09/01/2011		1.0 FTE
1.6.1.3.1	Update/Test/Eval.	6 months	09/01/2012	1.6.7.3	
1.6.2	**Tracking**	**36 months**	**09/01/2011**		**2.0-4.0 FTE**
1.6.2.1	Update/Test/Evaluate	36 months	09/01/2011	1.6.8/1.6.7.1-3	
1.6.2.2	Alternative Track. Eval.	24 months	06/01/2011	1.6.8/1.6.7.1-3	

[1] See detailed breakdown in Appendix

Resources

ID	Task-name	Institutions	Name	% of time needed	max %
1.6.1.1	PIXEL Hit Reconstruction	LBNL, IPHC	Postdoc-1 Student-1	40 20	60 40
1.6.1.2	IST Hit Reconstruction	MIT	Postdoc/Stud.	20	60
1.6.1.3	SSD Hit Reconstruction	KSU, BNL	Postdoc/Stud.	20/20	60/60
1.6.2.1	Tracking Update	BNL, KSU	Postdoc/Stud.	50	100
1.6.2.2	Alternative Tracking	BNL, ??	Postdoc/Stud.	50	100
1.6.3.1	Au-Au Vertex Reconstr.	BNL, KSU	Postdoc/Stud.	50	100
1.6.3.2	p-p Vertex Reconstr.	BNL, ??	Postdoc/Stud.	50	100
1.6.3.3	R&D	BNL, KSU	Postdoc/Stud.	50	100
1.6.4.1	Secondary Vertex Rec.	KSU, ??	Postdoc/Stud.	50	100
1.6.5.1	SURVEY	LBNL, MIT, KSU, BNL	Postdoc/Stud.	50	100
1.6.5.2	GLOBAL Alignment	LBNL, MIT, KSU, BNL	Postdoc/Stud.	50	100

Summary

- Preparing for CD2/3 and future in both fronts:
  - 'Bureaucratic' (some essential)
  - Simulations
- Manpower involved is still thin but with tasks and schedule in hand Flemming and I will change that.