Weekly report

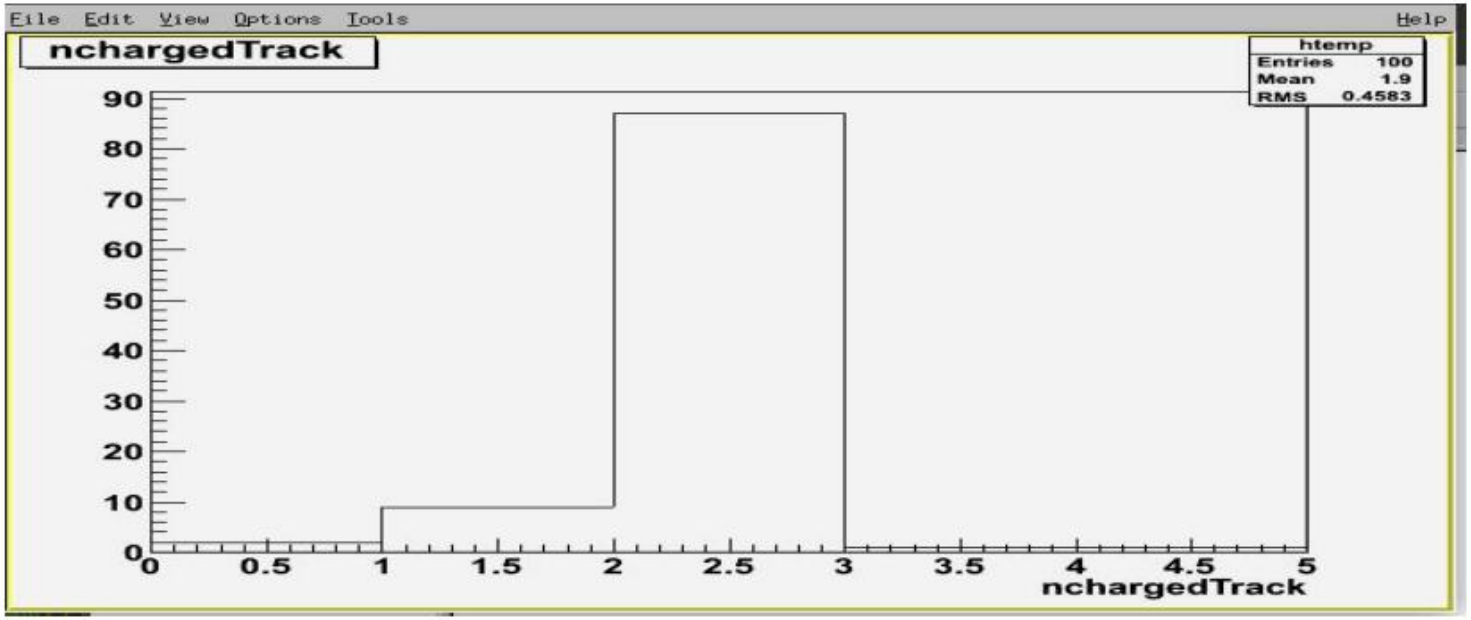
Weekly summary

- ChicJ to gam lepton lepton
  - preSeletion updated. number of charged tracks has been saved.
- Jpsi to inv.
  - discussed with PKU
  - suyu tried combine two data sets directly.
- Etac inv.
  - background study with inclusive MC sample

Amit

Weekly Report

1. I had done the simulation and reconstruction for 100 events.
2. I have saved the charged Tarck information for 100 events and successfully generated the rootfile.



3. Next I am trying to get more and more information with my script code with proper suggestion of Kai Lui.

Weely report – Kong Lingteng

What I have done:

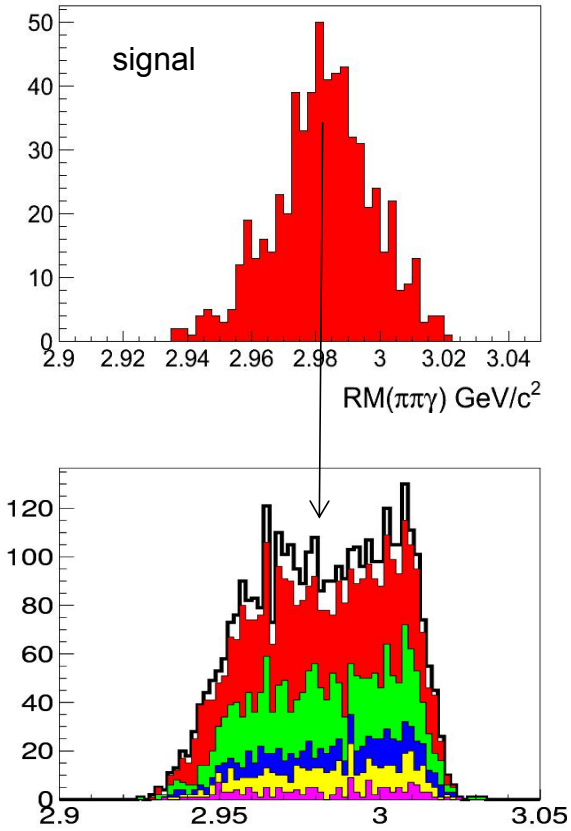
- 1.Learn root. (draw pictures, ttree, histogram, etc.)
- 2.Study machine learning. (Decision tree)
- 3.Fix bugs and run iris classification program.
- 4.Understand the functions that the program uses.

Plan:

- Discuss with Xin about the next step

Kai

- Etac inv.
  - some background analysis with inclusive MC samples.
  - no obvious peaking background could be seen
  - resolution of signal peak sounds not good, may be could be improved by performing kinematic fit.



No.	decay chain	final states	iTopology	nEvt	nTot
0	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \mu^+\mu^-$	$\mu^+\pi^-\mu^-\pi^+$	1	1505	1505
1	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to e^+e^-$	$e^+\pi^-e^-\pi^+$	2	982	2487
2	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to e^+e^-\gamma_{FSR}$	$e^+\pi^-e^-\pi^+$	6	348	2835
3	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \mu^+\mu^-\gamma_{FSR}$	$\mu^+\pi^-\mu^-\pi^+$	3	325	3160
4	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to n\bar{n}$	$\pi^-\bar{n}\pi^+n$	11	146	3306
5	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to e^+e^-\gamma_{FSR}\gamma_{FSR}$	$e^+\pi^-e^-\pi^+$	7	79	3385
6	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to p\bar{p}$	$\pi^-\bar{p}\pi^+p$	4	38	3423
7	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \pi^0\bar{n}n$	$\pi^-\bar{n}\pi^0\pi^+n$	8	20	3443
8	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \rho^-\pi^+, \rho^- \to \pi^-\pi^0$	$\pi^-\pi^-\pi^0\pi^+\pi^+$	23	17	3460
9	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \gamma\eta, \eta \to \gamma\gamma$	$\pi^-\pi^+\gamma\gamma\gamma$	13	16	3476
10	$\psi' \to J/\psi\pi^+\pi^-, J/\psi \to \mu^+\mu^-\gamma_{FSR}\gamma_{FSR}$	$\mu^+\pi^-\mu^-\pi^+$	18	13	3489

Suyu

- Suyu worked hard this week.
  - report on meeting with PKU
  - report on the performance appraisal(考核)

J/psi → invisible

Take 09 & 12 as one data set

$$\frac{B(J/\Psi \rightarrow invisible\ )}{B(J/\Psi \rightarrow \mu^+\mu^-)} = \frac{\frac{N_{invi}}{\varepsilon_{invi}\cdot\varepsilon_{trig}}}{\frac{N_{\mu\mu}}{\varepsilon_{\mu\mu}}}$$

Items	N_{invi}	ε_{invi}(%)	ε_{trig}(%)	$N_{\mu\mu}$	$\varepsilon_{\mu\mu}$(%)	$B_{invi}/B_{\mu\mu}$(*10^{-4})	UL @ 90%(*10^{-3})
2009	-670 ± 406 ± 2987	40.48 ± 0.07	99.4 ± 0.1	713652 ± 693 ± 3497	32.36 ± 0.03	-26.6 ± 4.4 ± 30.0	5.08
2012	-60900 ± 683 ± 9901	39.25 ± 0.07	99.8 ± 0.04	2224671 ± 1275 ± 10901	31.44 ± 0.03	-219.72 ± 2.47 ± 35.74	1.11
Combine	-61570 ± 784 ± 10342	39.86 ± 0.07	99.7 ± 0.04	2938323 ± 1451 ± 11448	31.90 ± 0.03	-168.17 ± 2.17 ± 28.26	0.987

mean value (500,000 MC sample)

$\frac{4212+11911}{4237+11934}$

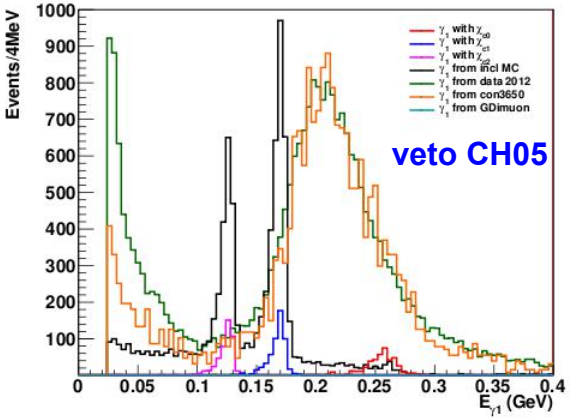
mean value (3,000,000 MC sample)

backup

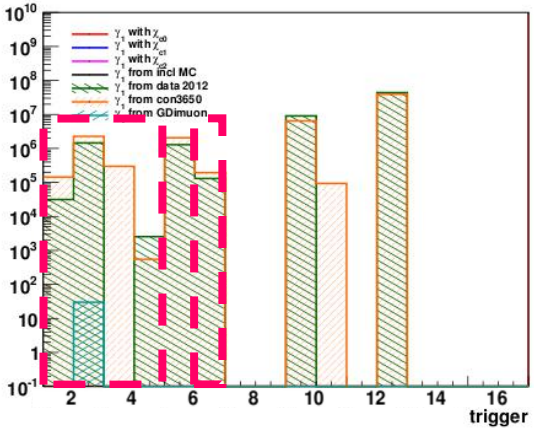
backup of suyu

Chi_c → gam+invisible

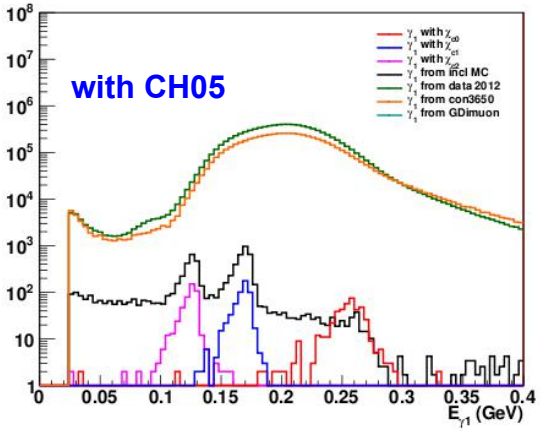
- Just veto MDC channels



EMC/TOF/MDC	CH01	CH02	CH03	CH04	CH05	CH06	CH09	CH10	CH12
CND00:NClus.GE.1							1		
CND01:NClus.GE.2									1
CND07:BEtot_H							1		
CND09:Etot_L					1				
CND10:Etot_M									1
CND12:NBClus.GE.1		1				1			
CND13:NEClus.GE.1	1								
CND17:BTOF_BB				1					
CND19:NETOF.GE.1	1								
CND20:NBTOF.GE.2		1	1						
CND21:NBTOF.GE.1					1	1			
CND38:STrk_BB	1								
CND42:LTrk_BB				1					
CND44:NLtrk.GE.2		1	1			1			
Random Trigger								1	



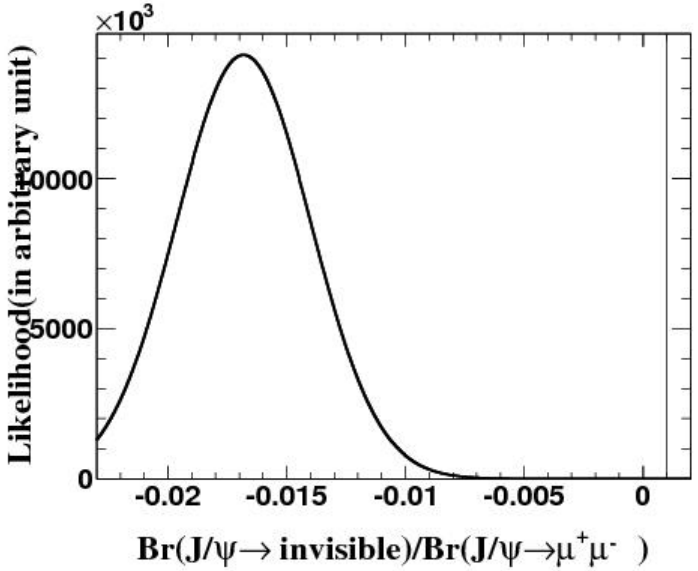
trigger channel information

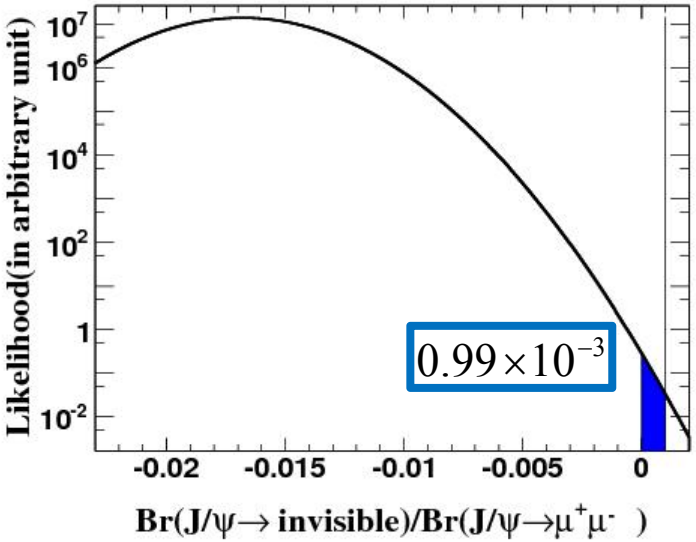


- Background is too high to show chi_cJ peaks.

J/psi → invisible

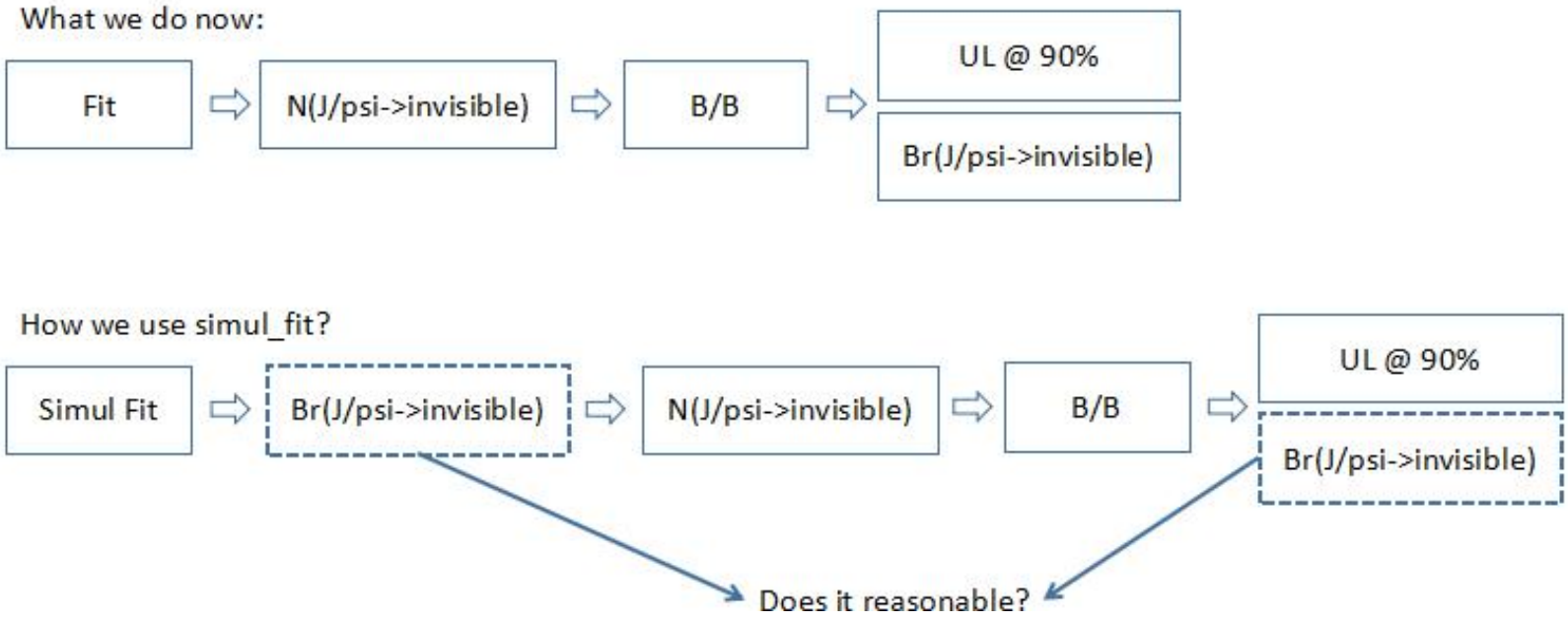
Take 09 & 12 as one data set





Upper limit for 2009: 5.08×10^{-3}

Upper limit for 2012: 1.11×10^{-3}

J/psi → invisible

Simultaneous fit