

---

Subject: Probability ditribution of mass constraint fitting in oct14 vs. mar15  
Posted by [Lu Cao](#) on Tue, 07 Jul 2015 13:25:13 GMT

[View Forum Message](#) <> [Reply to Message](#)

---

Dear all,

I simulated 2k evt of this decay chain:

$p\bar{b}arp \rightarrow Ds^+ Ds^-$ ;  $Ds^- \rightarrow K^+ K^- \pi^-$ ;  $Ds^+ \rightarrow \eta e^+ \nu_e$ ;  $\eta \rightarrow \pi^+ \pi^- \pi^0$ ;  $\pi^0 \rightarrow 2 \gamma$ .

Inorder to reconstruct eta, I do mass constraint fitting on ( $\pi^+$ ,  $\pi^- \pi^0$ ) after the vtx fitting of combined charged daughters. Recently I find the probability distribution of the eta mass constraint fitting seems incorrect, where most of prob are skewed to 1 and chi2 is very small, i.e. the mean value of chi2 is 0.0003. The interesting thing is this doesn't happen in the mass constraint fittings of  $Ds^-$  (pure charged daughters) and  $\pi^0$  (pure neutral daughters). This problem is found with the release mar15 (#27529). I test the identical code with release oct14 (#26514), and find this problem doesn't arise there (see attached histograms). The code I used for testing is attached.

Question: Why it happens and how can I fix it?

Many thanks in advance.

Best regards,

Lu

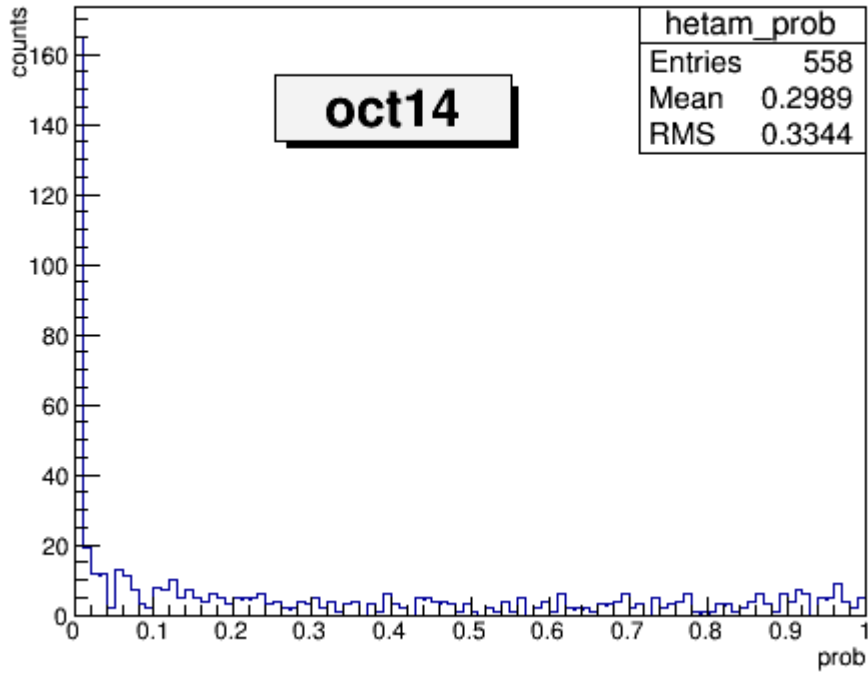
---

### File Attachments

---

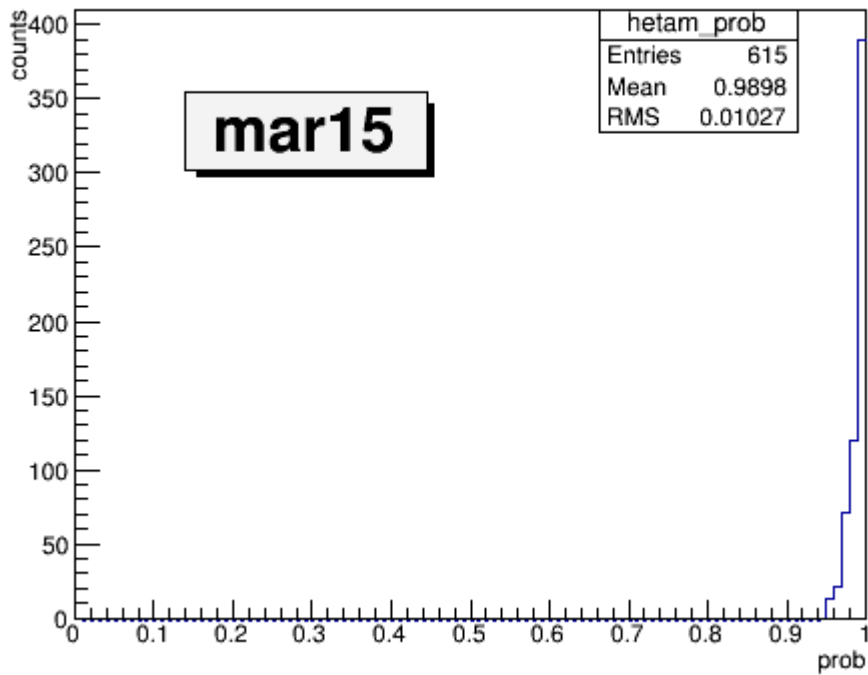
- 1) [dspair.dec](#), downloaded 656 times
- 2) [sim\\_complete.C](#), downloaded 643 times
- 3) [digi\\_complete.C](#), downloaded 608 times
- 4) [reco\\_complete.C](#), downloaded 644 times
- 5) [pid\\_complete.C](#), downloaded 626 times
- 6) [oct14.png](#), downloaded 1528 times

Chi2 probability distribution of  $\eta$  mass constraint fit



7) [mar15.png](#), downloaded 1603 times

Chi2 probability distribution of  $\eta$  mass constraint fit



8) [up\\_mcf\\_neu\\_recon.C](#), downloaded 640 times

---