

Answers to questions raised by conveners on EW penguin.

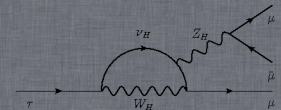
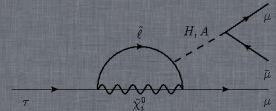
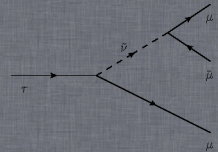
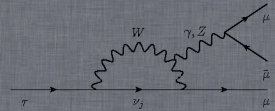
Marcin Chrzęszcz^{1,2}, Nicola Serra¹

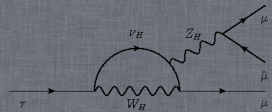
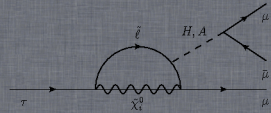
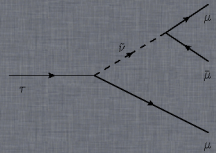
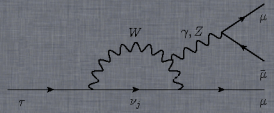
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4th October 2013



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Q: What is the real $\mu\mu$ efficiency after vetoing the J/ψ ?

A:

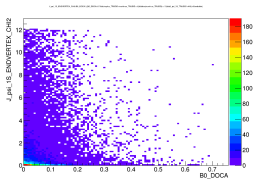
| Efficiency | | | |
|--|-----|--|-------|
| Candidate has 2 real μ ID as μ | | Candidate has 1 real μ ID as μ . | |
| J/ ψ veto | 83% | J/ ψ veto | 99% |
| no J/ ψ veto | 96% | no J/ ψ veto | 99.9% |

Comment: If you are scared of 83% please remember that this is stripping. What happens is that one of two muons is missID as pion. Using π/μ veto for swaps, which we do in preselection after stripping this number goes back to 94%.

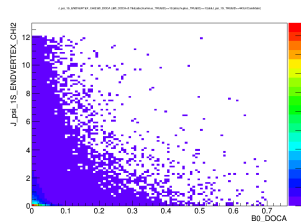
Q: Plot J/ψ vetrex Chi2 vs Docca.

A:

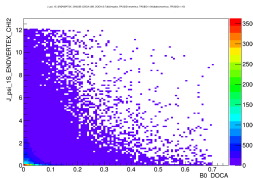
MC bck(J/ψ veto)



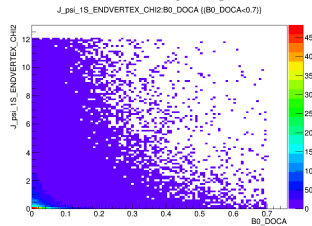
Signal($J/\psi K^*$)



MC bck(no J/ψ veto)



Data after stripping



Clearly making a very loose cut on DOCCA (0.45mm) is harmless.

Q: Do we have μ from PV?

A: No. there is few($\mathcal{O}(10)$) candidates only that π from PV was missID as μ .

Q: What is the stripping efficiency?

A: Based on $\tau \rightarrow 3\mu$ $12pb^1$ sample efficiency is(with J/ψ):

$$\varepsilon = \frac{61.020(\text{stripped})}{10.196.221(\text{Generated})} = 0.599\% \quad (1)$$

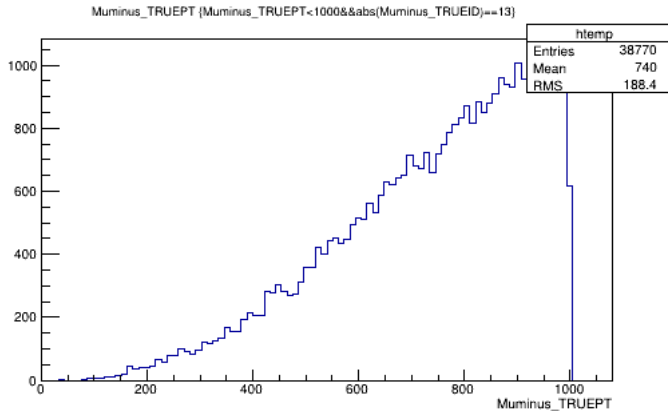
With J/ψ veto:

$$\varepsilon = \frac{18705(\text{stripped} + J/\psi \text{ veto})}{10.196.221(\text{Generated})} = 0.183\% \quad (2)$$

Back of the envelope calculation. If we need $1fb^{-1}$ we need 833M events produced, of which 5M will be stored on DSTs(filtered production) If we veto J/ψ we will produce (back of the envelope calculation) we need 255M events produced and 1.53M stored in DSTs.

Q: Is P_t harmless?

A: Yes. It's 0.999924 efficient! See signal MC.



Q: How long does it take to generate 1k generator level events?

A: Around 90 min. on Intel(R) Xeon(R) CPU 5140 2.33GHz