



Status report

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- Correction of oversubtraction caused by bottom baryon

• Strategy

1. Fit Λ_b 7TeV measurement using Tsallis function.

$$C \cdot p_T \left[1 + \frac{\sqrt{p_T^2 + m^2} - m}{nT} \right]^{-n}$$

CMS: $n = 7.6 \pm 0.4$, $T = 1.10$ GeV (fixed, determined by $B^{0,+}$)

2. Λ_b 7TeV measurement is scaled to 13TeV by FONLL.

3. Multiply branching ratio factor

$$\frac{BR(b \rightarrow \Xi_b)BR(\Xi_b \rightarrow e\Xi\nu)}{BR(b \rightarrow \Lambda_b)BR(\Lambda_b \rightarrow e\Lambda\nu)}$$

4. Multiply Xib efficiency

$$\frac{BR(b \rightarrow \Xi_b)BR(\Xi_b \rightarrow e\Xi\nu)}{BR(b \rightarrow \Lambda_b)BR(\Lambda_b \rightarrow e\Lambda\nu)}$$

5. Convert Xib pT to eXi pT using response matrix

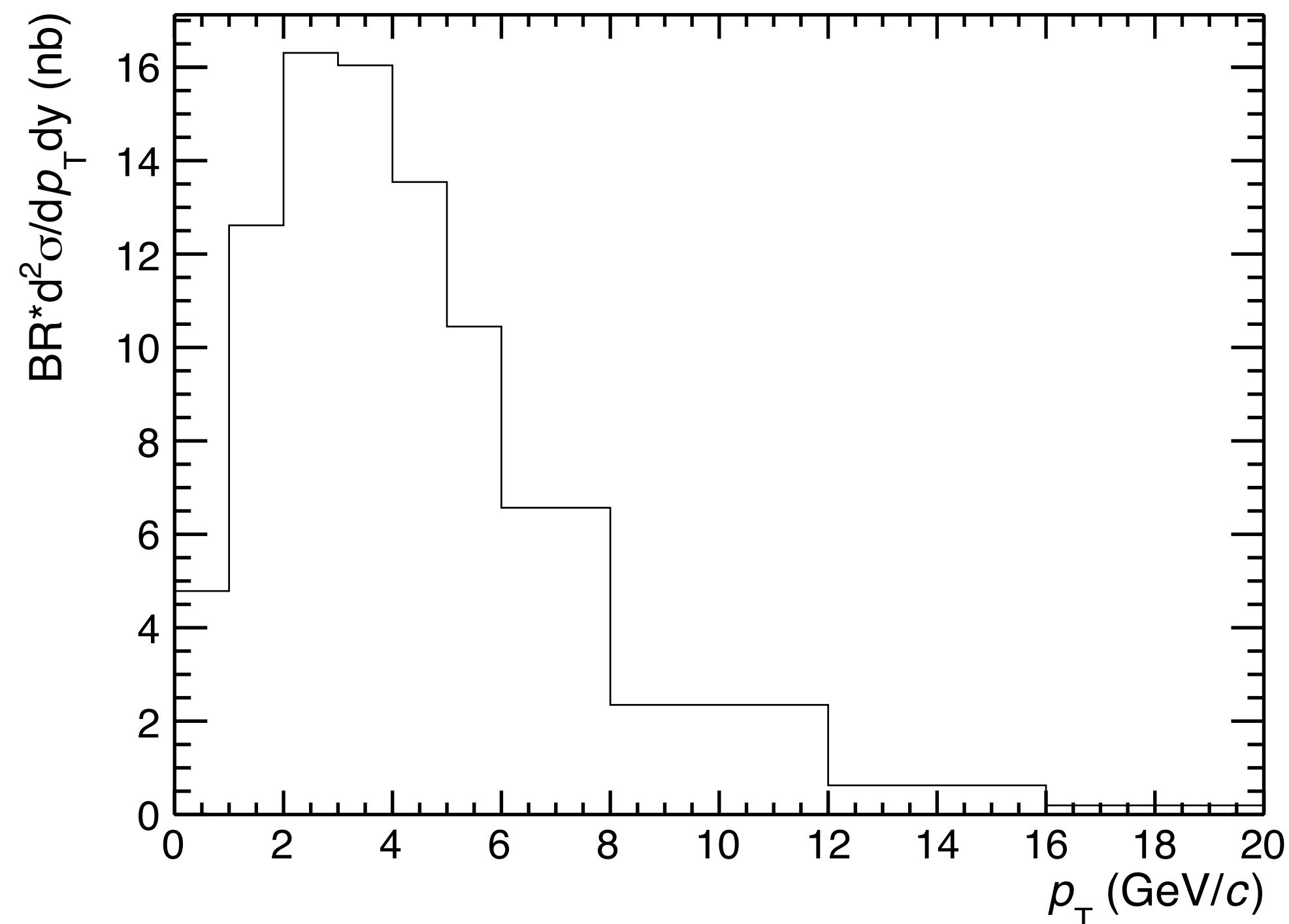
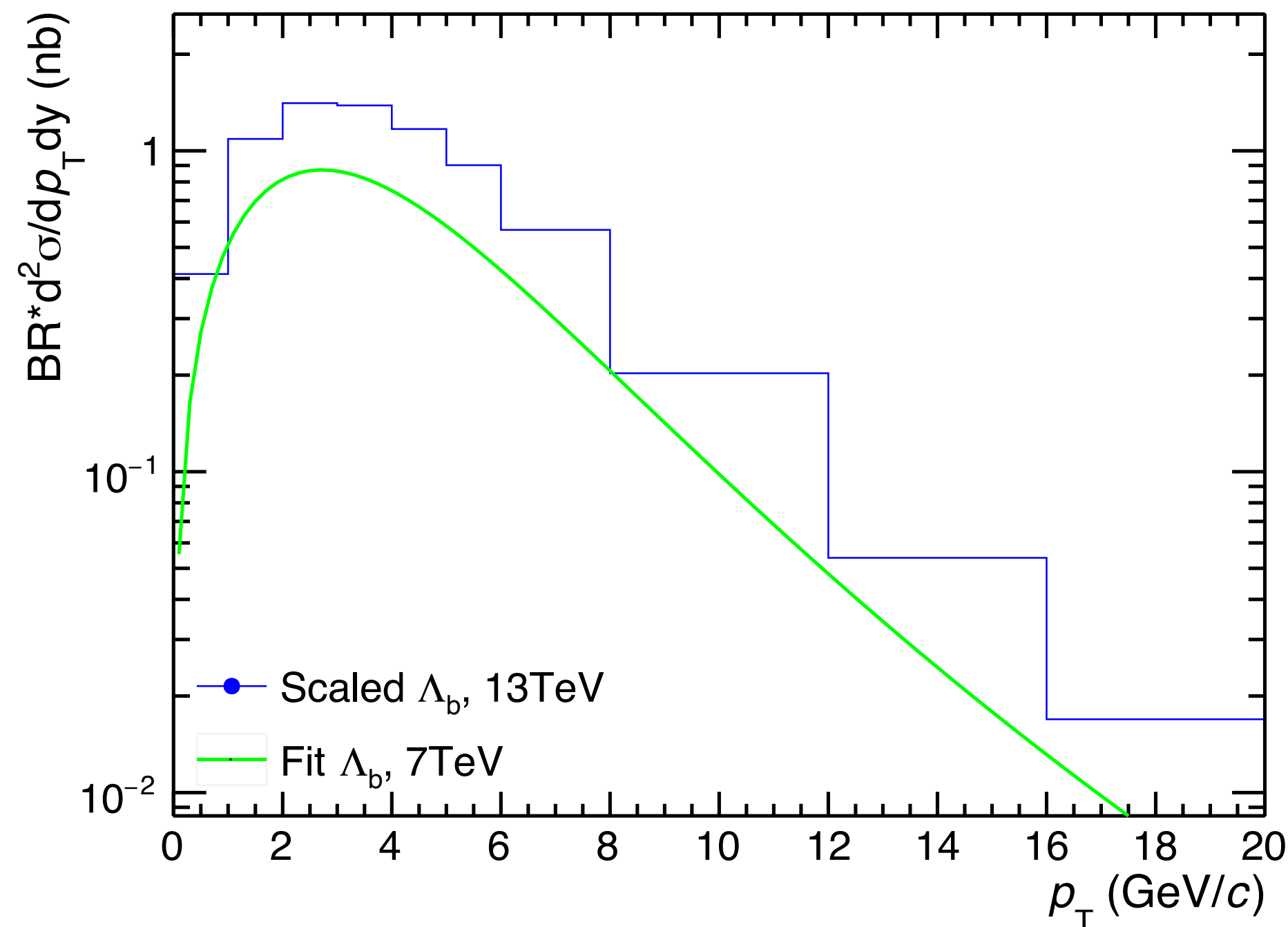
$$Efficiency = \frac{\Xi_b(Reco, WS)}{\Xi_b(Gen)_{|y| < 0.5}}$$

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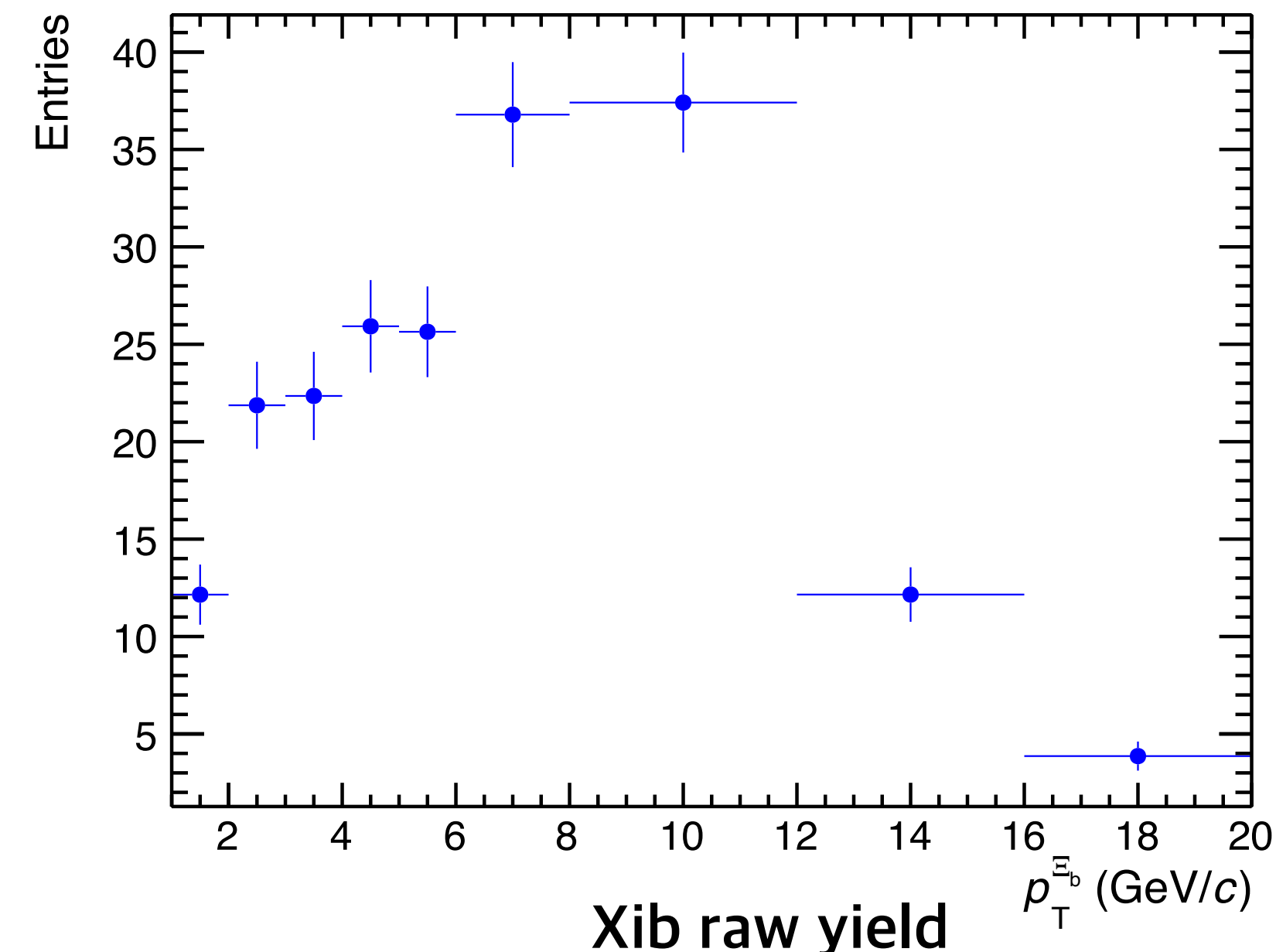
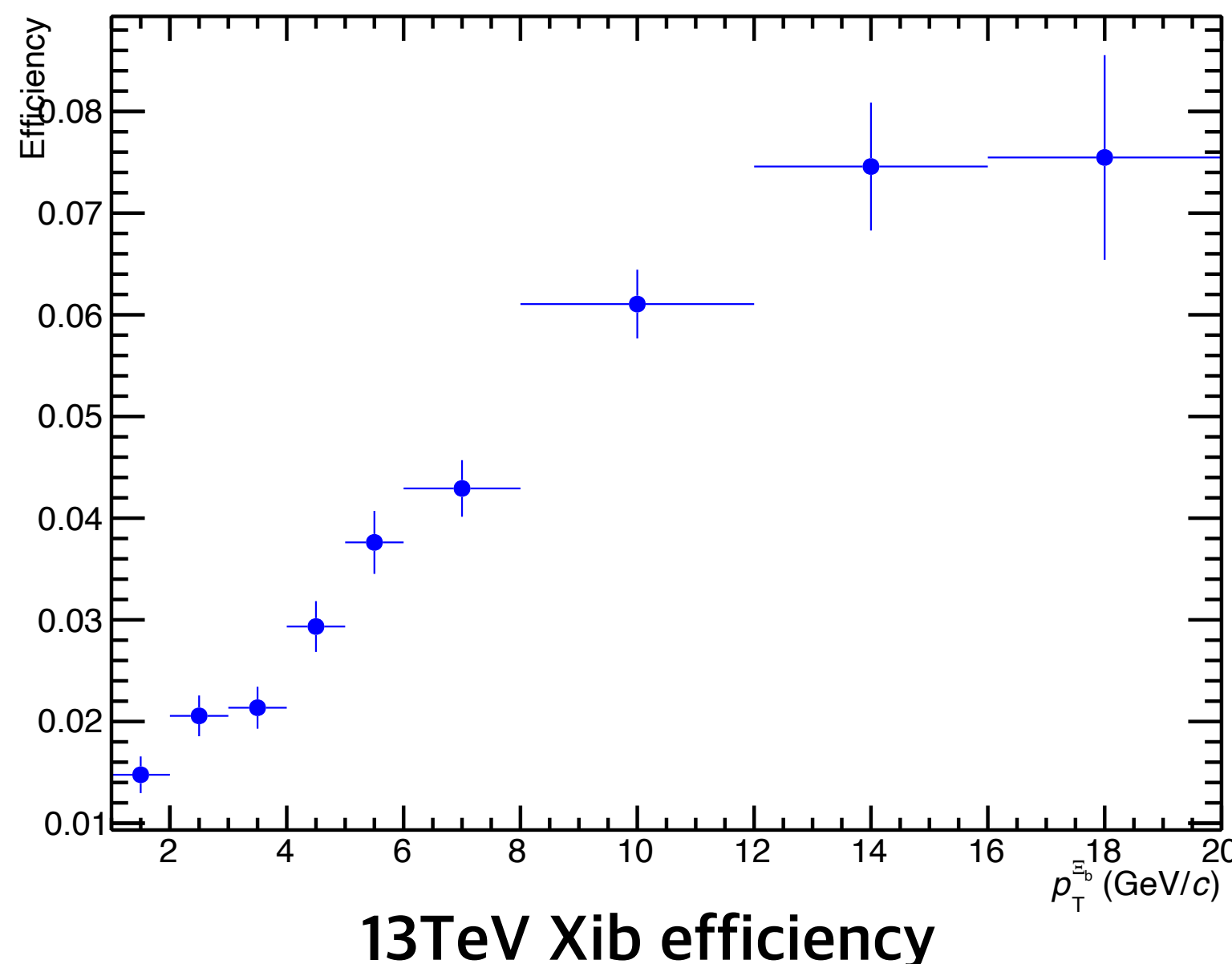
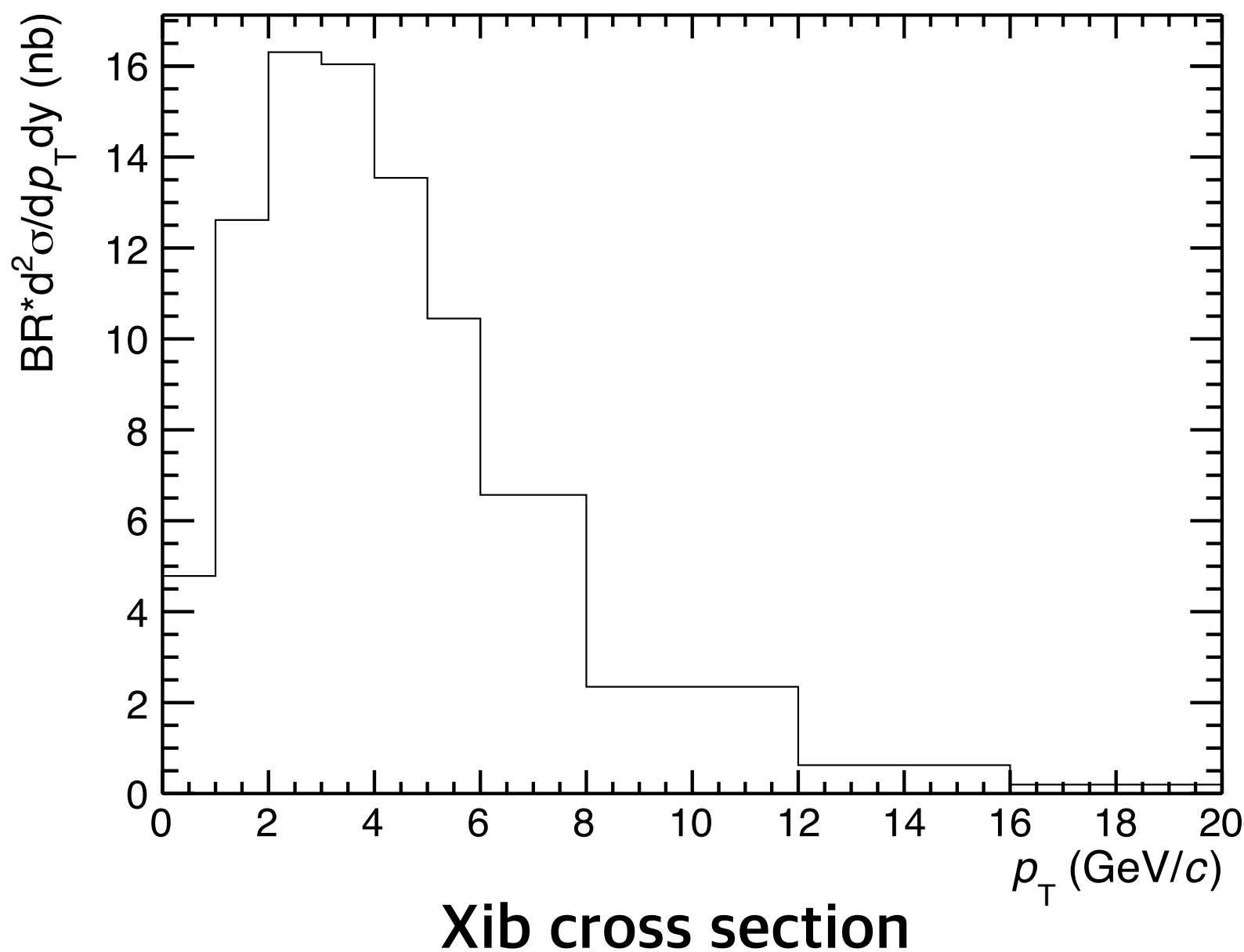
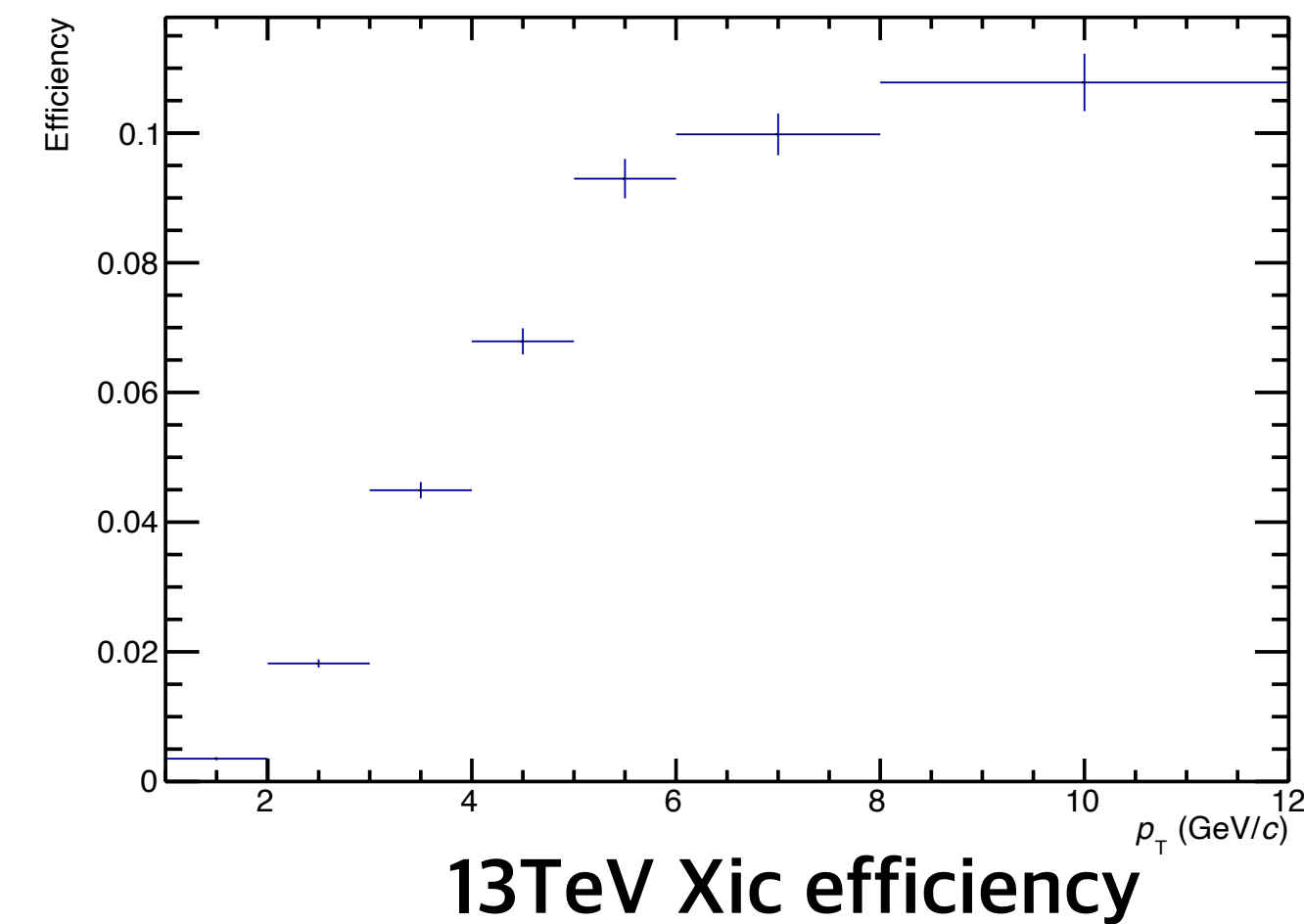
1. Fit Λ_b 7TeV measurement using Tsallis function.
2. Λ_b 7TeV measurement is scaled to 13TeV by FONLL.
3. Multiply branching ratio factor

$$\frac{BR(b \rightarrow \Xi_b)BR(\Xi_b \rightarrow e\Xi\nu)}{BR(b \rightarrow \Lambda_b)BR(\Lambda_b \rightarrow e\Lambda\nu)} = \frac{[BR(b \rightarrow \Xi_b)BR(\Xi_b \rightarrow X_c e\Xi\nu)]}{BR(b \rightarrow \Lambda_b)BR(\Lambda_b \rightarrow e\Lambda\nu)[BR(X_c \rightarrow \Xi-X')]} = \frac{(5.4 * 10^{-4})/(0.014)}{3.26 * 10^{-3}}$$

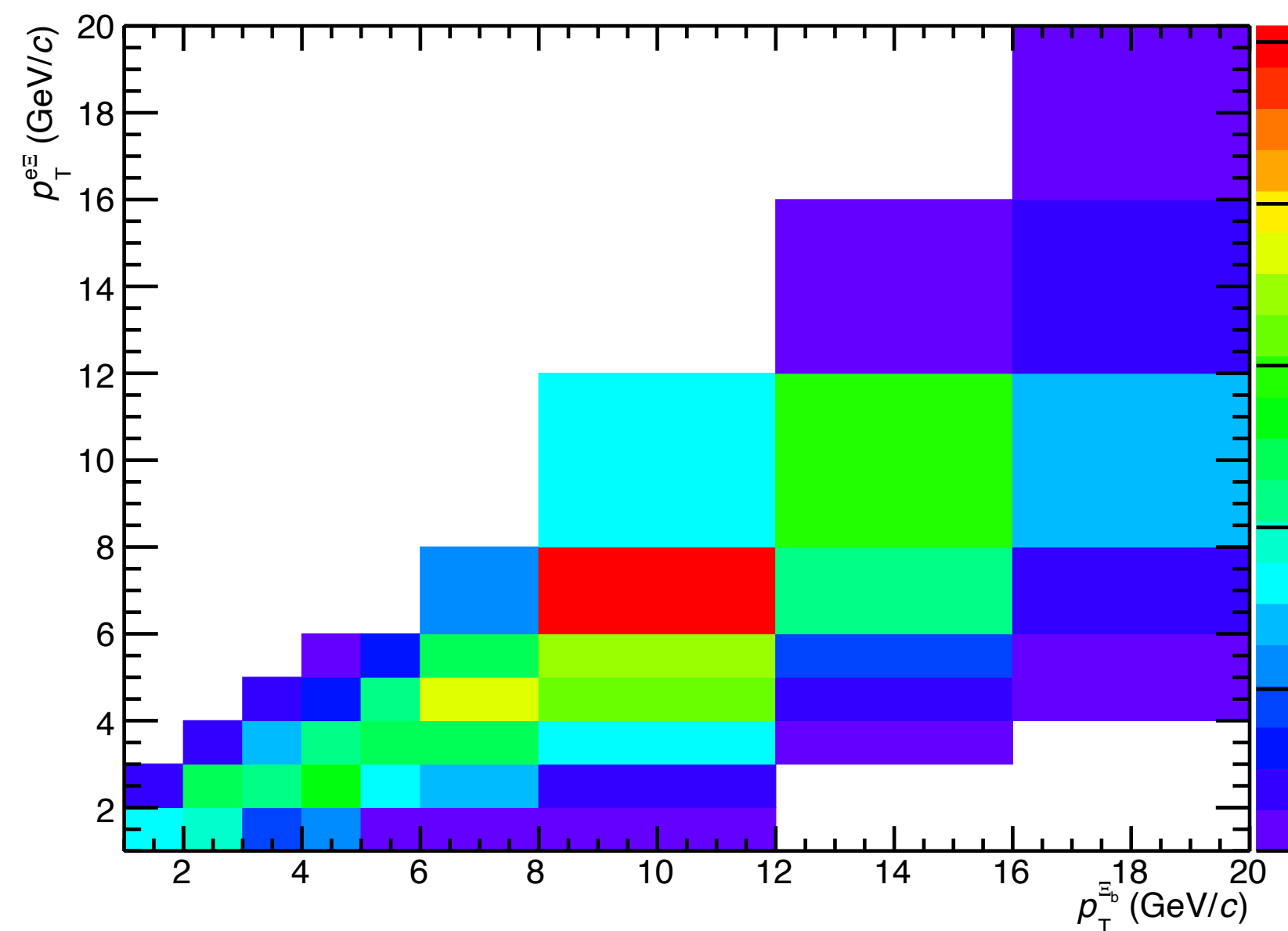


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- 4. Multiply Xib efficiency

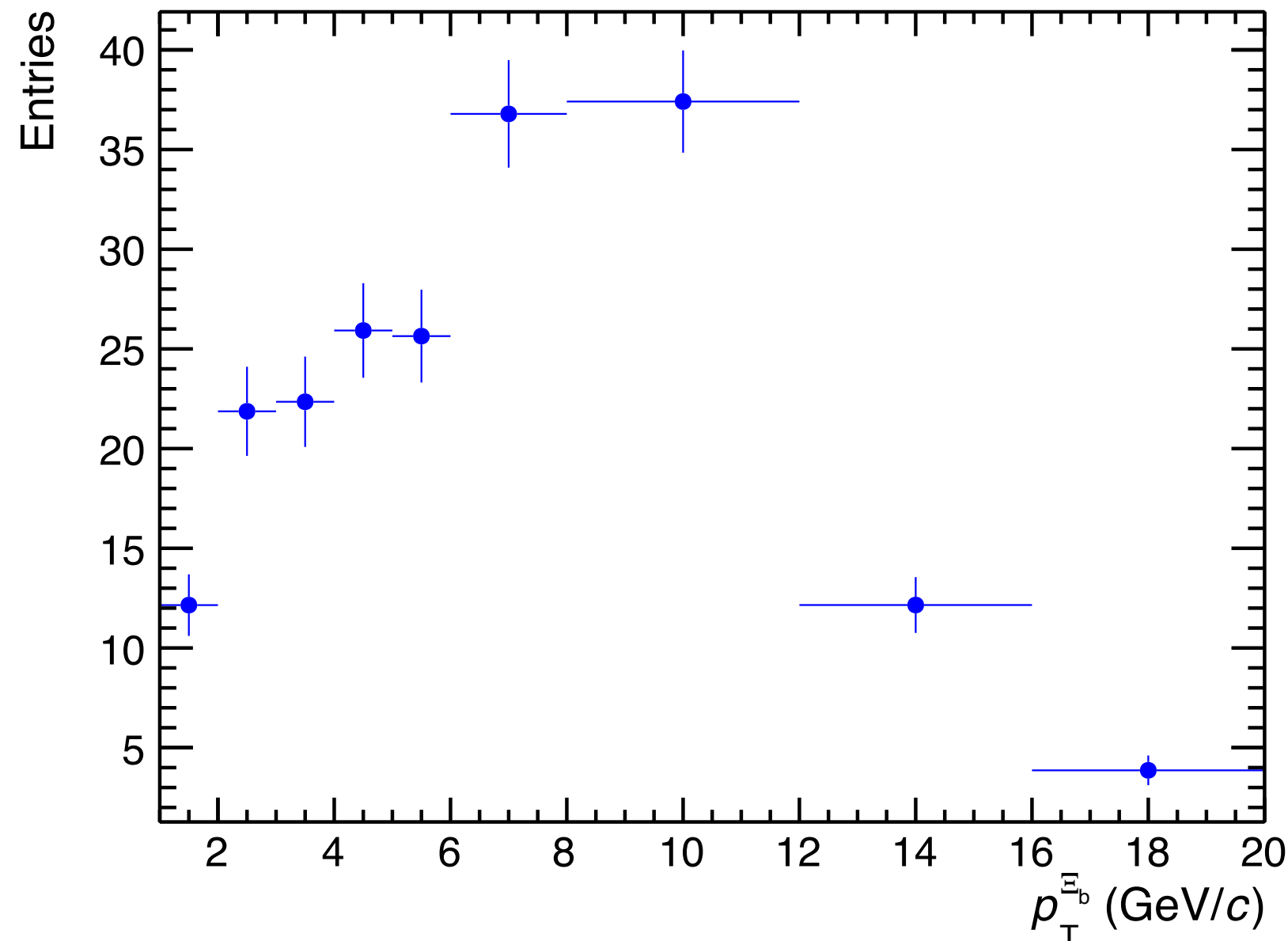
$$Br \cdot \frac{d\sigma^{\Xi_c^0}}{dp_T dy} = \frac{f_{prompt} \cdot N_{\Xi_c^0}^{raw}}{2 \cdot \Delta p_T \Delta y \cdot (Acc \times \epsilon \times \epsilon_{\Xi \text{ tag}}) \cdot L_{int}} \quad Efficiency = \frac{\Xi_b(Reco, WS)}{\Xi_b(Gen)_{|y|<0.5}}$$



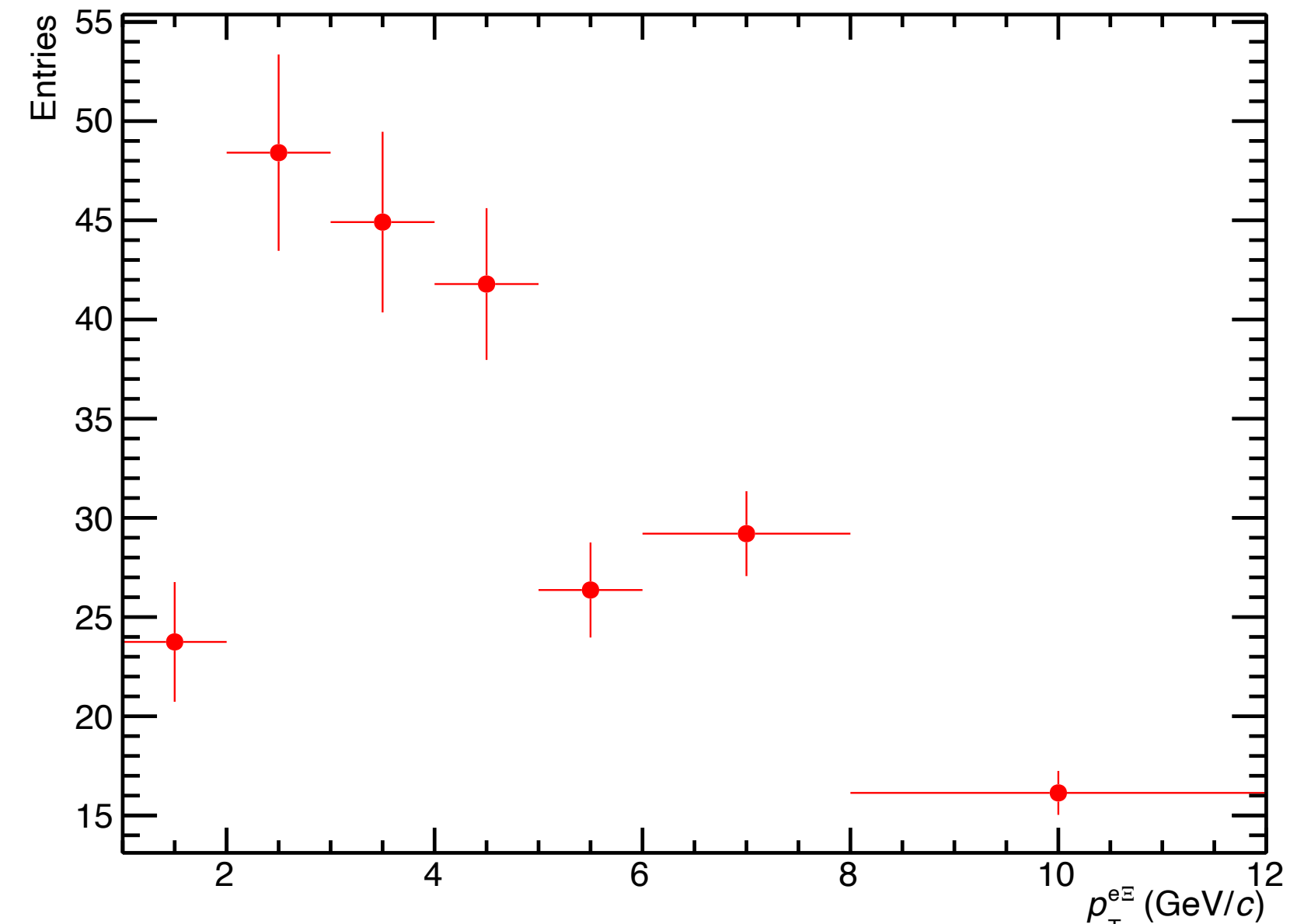
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 - 5. Convert Xib pT to eXi pT using response matrix



Response matrix



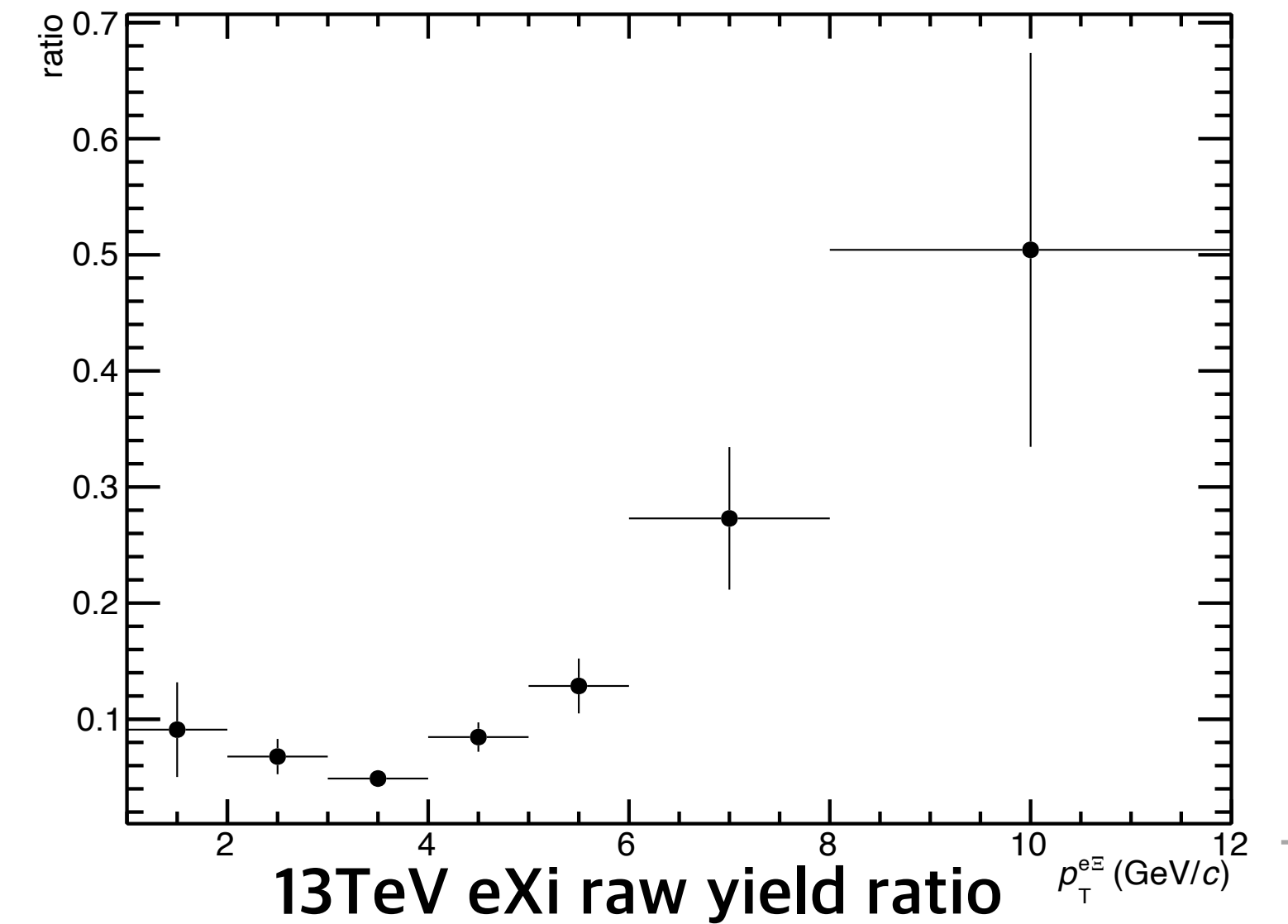
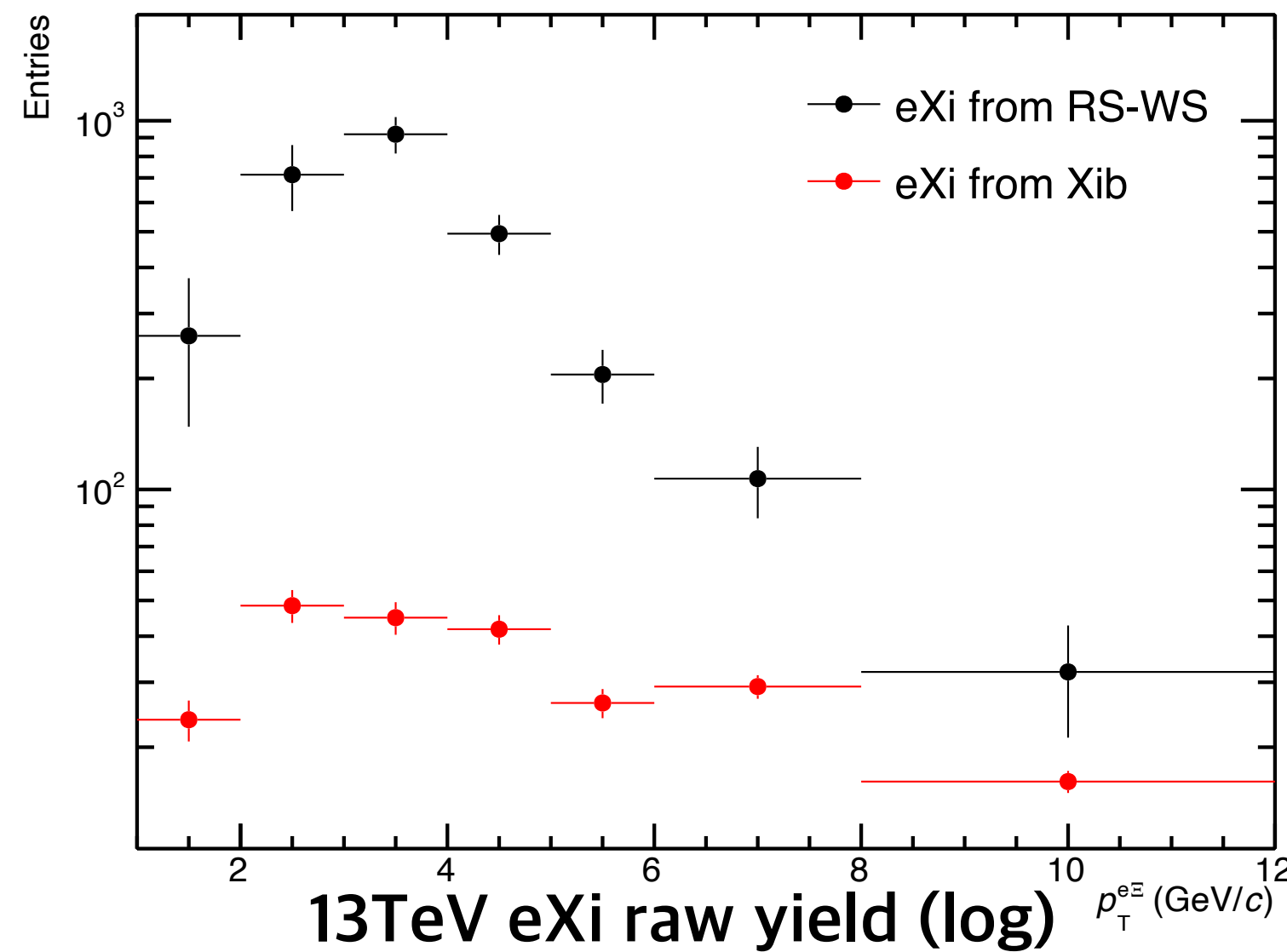
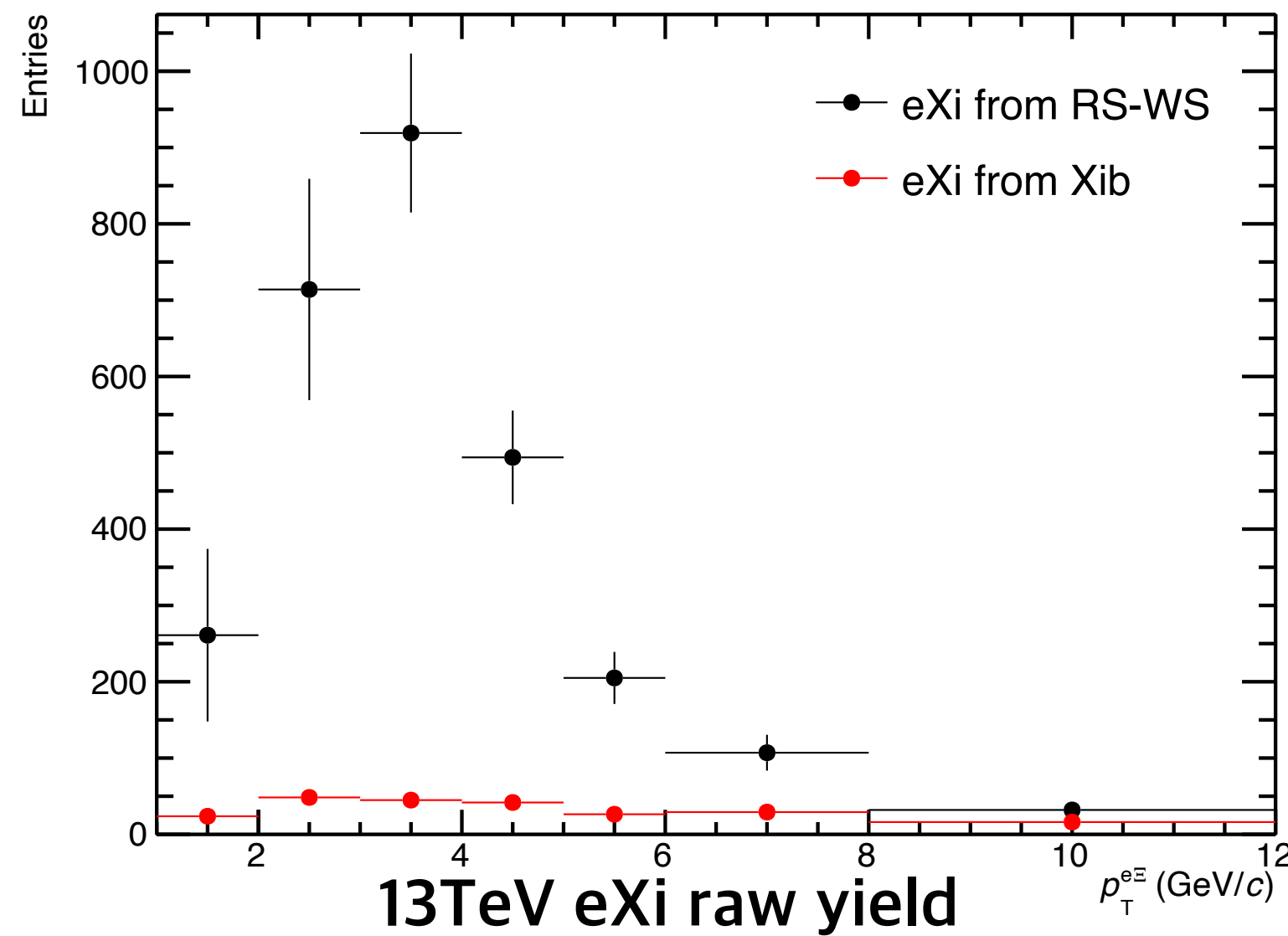
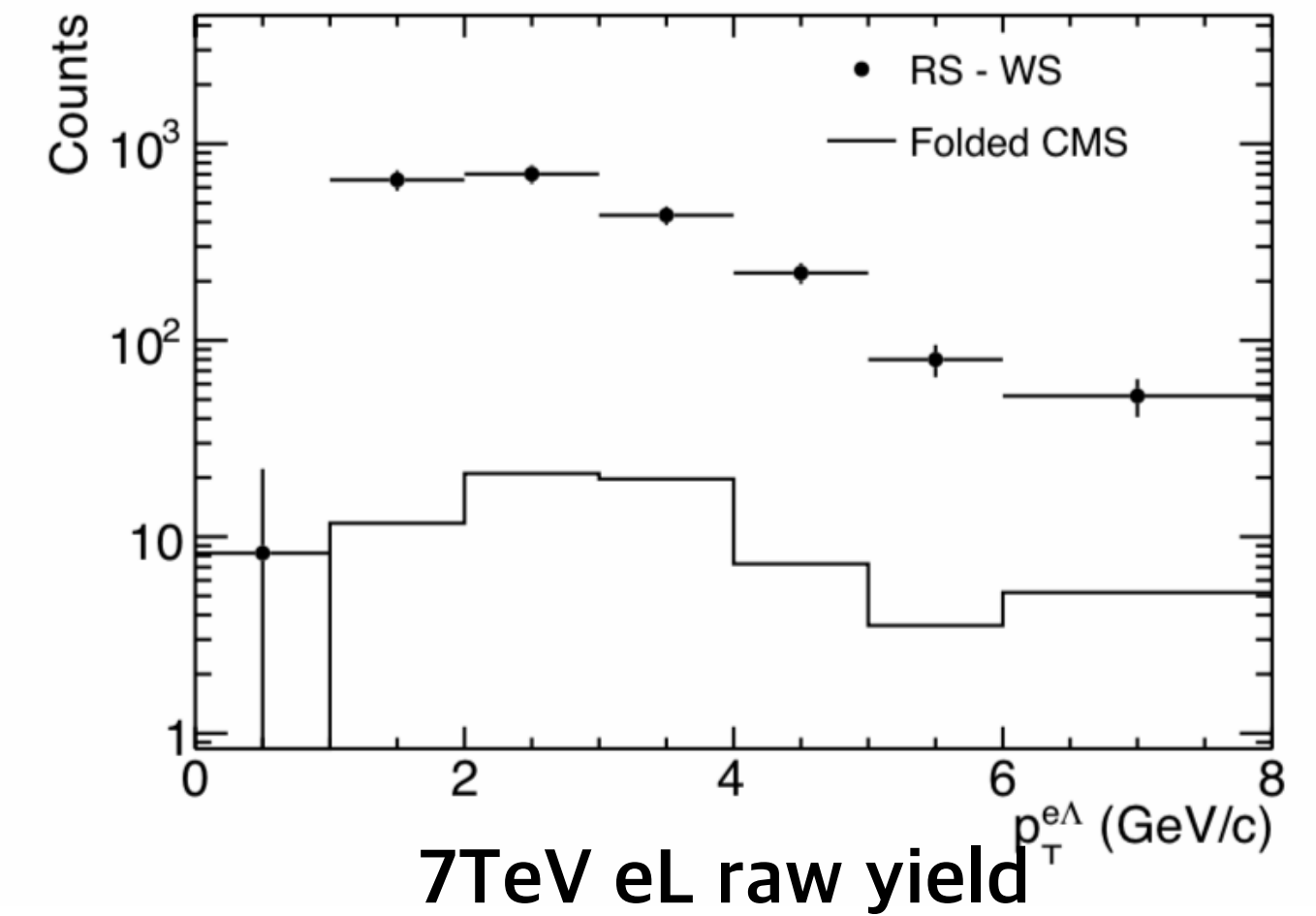
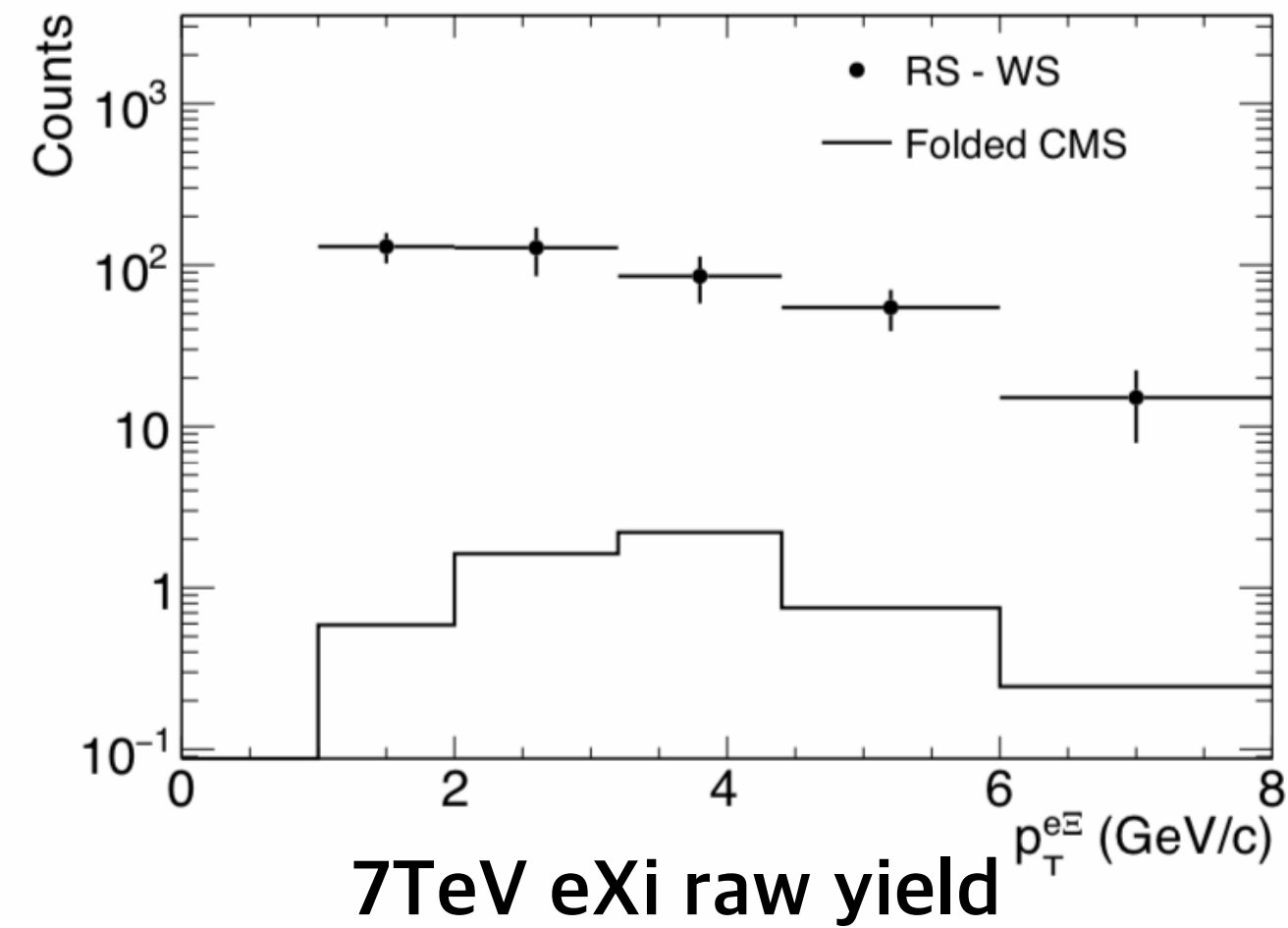
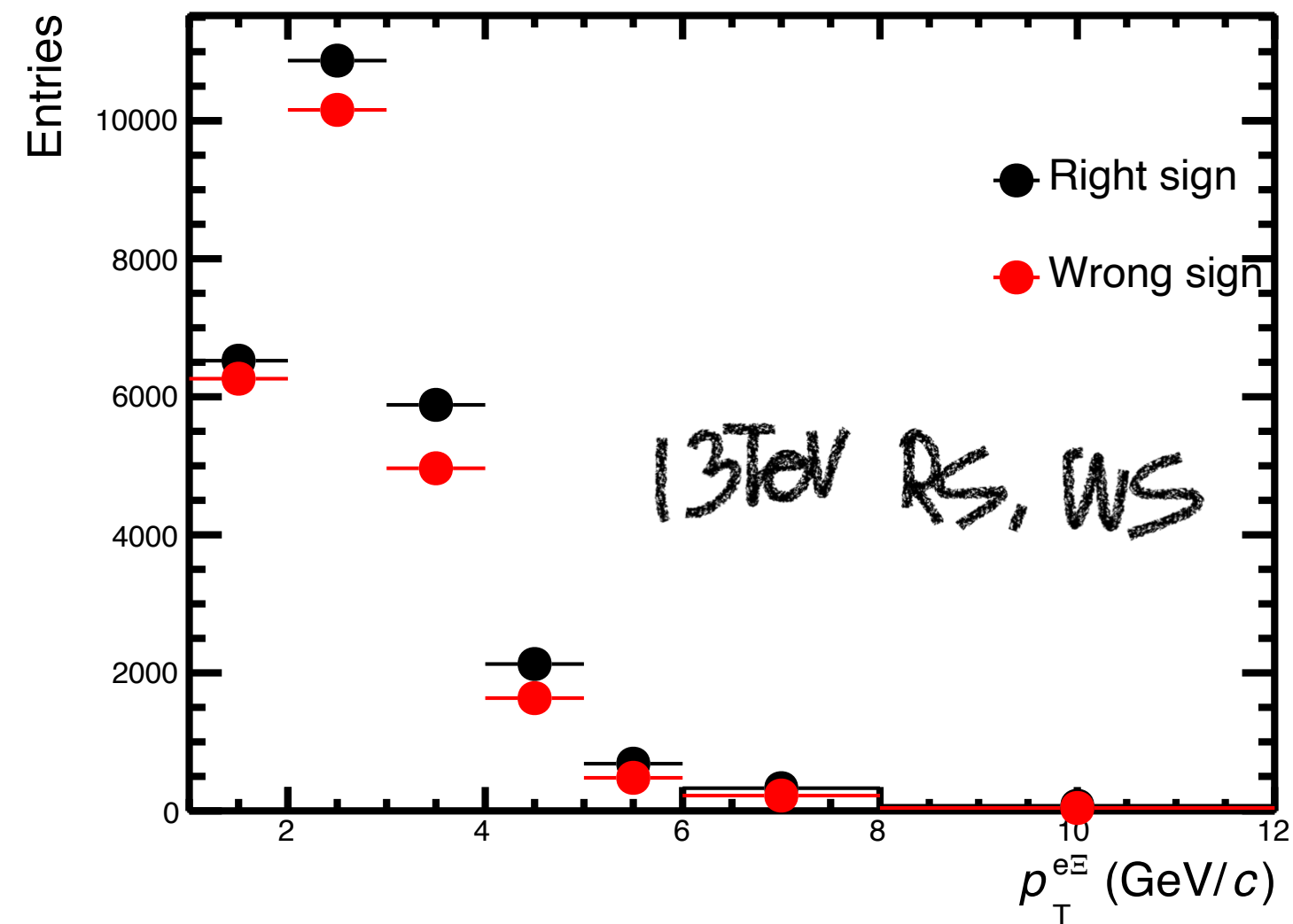
Xib raw yield



eXi raw yield

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- Correction of oversubtraction caused by bottom baryon
- Compare result



Back up
