# Updates on activities.

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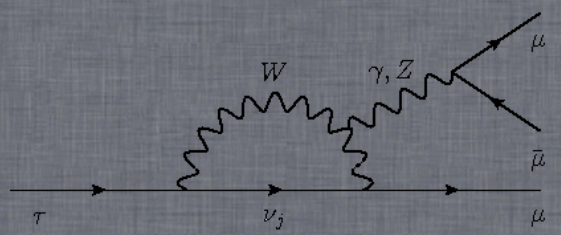
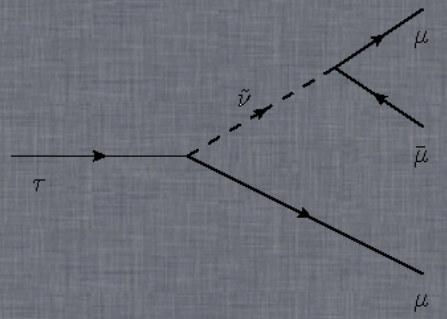
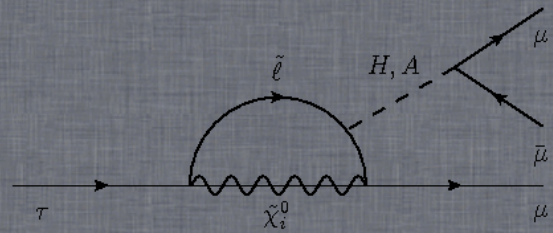
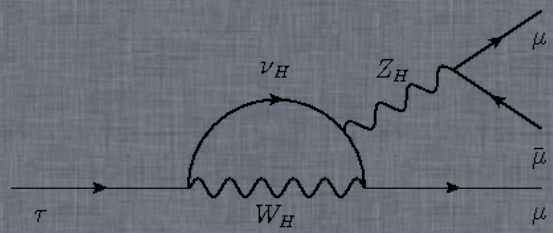


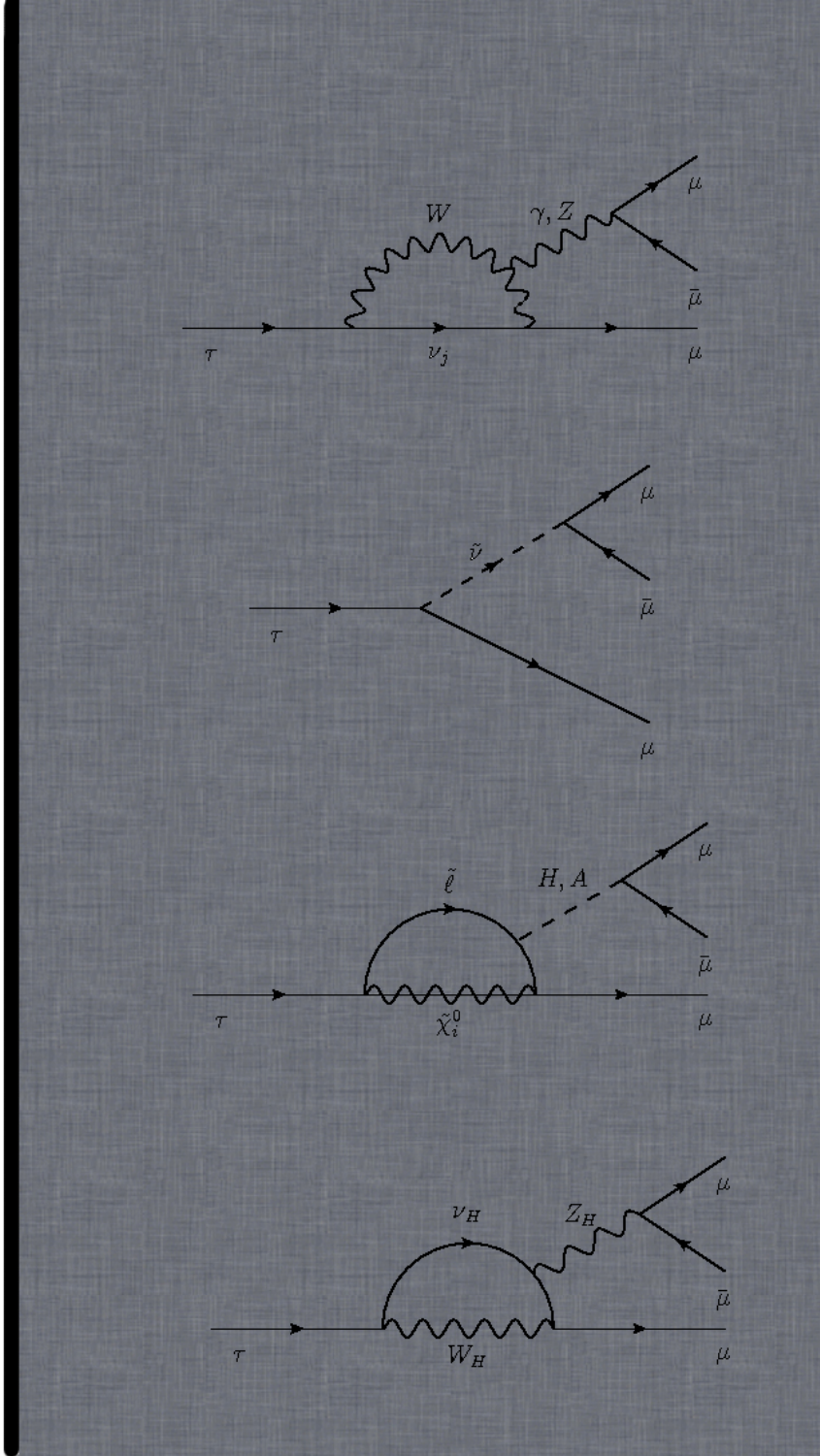



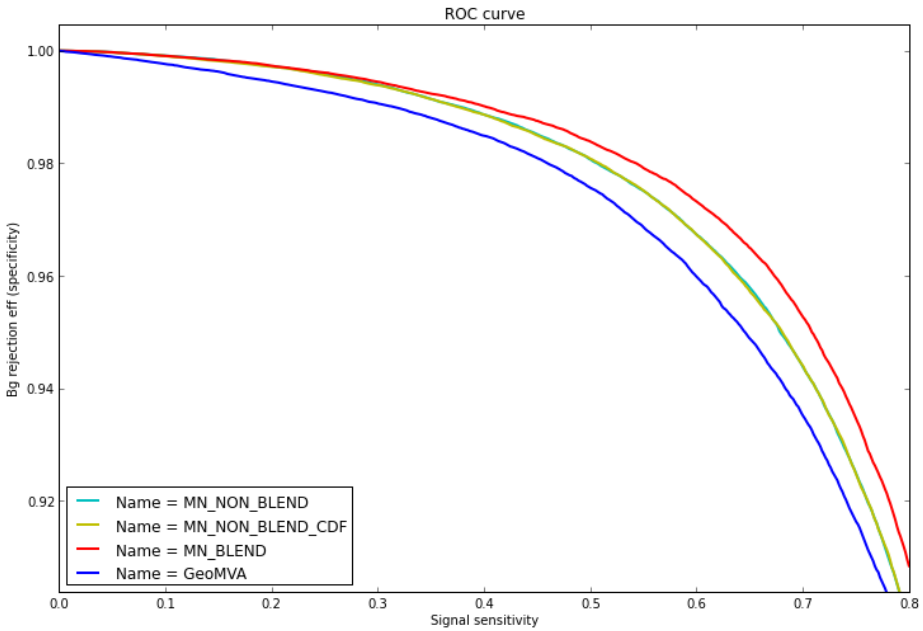
$\tau \to 3\mu$

$\mathrm{B} \to \mathrm{K}^{*}\mu\mu$



# Clarifies wars -> the end

1. Since Paul also wanted to have the shot with his TMVA clasifier we needed to rich the agreement on selection criteria.
2. We agrred to used MC signal vs data sidebads

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# Blending - HOW TO

1. Take your MC signal(5 sources of $\tau$) and divide it in 3 pieces. Bck MC divide into 2.
2. Take 5$\times$ the first part of signal MC and 1/2 of bck adn train as much classifiers as you can.
3. Mix with correct propotions the signal channels on 2/3 and 3/3 part and apply to them previously trained classifiers.
4. Take 2/3 of signal and 2/2 of bck and train using previously trained clarifies response and previously variables that you used for training.
5. the final classifier apply to 3/3 of signal which will be our unbiased sample for all the efficiency studies.

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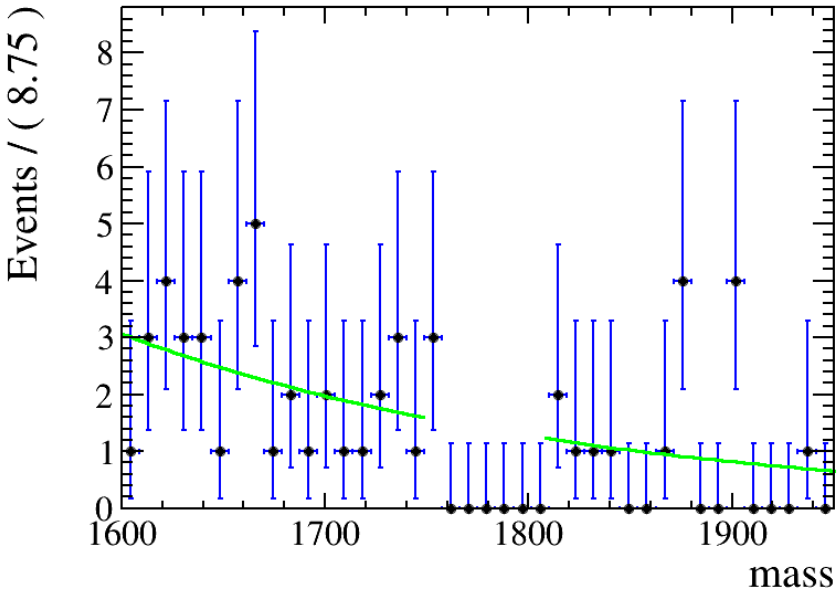
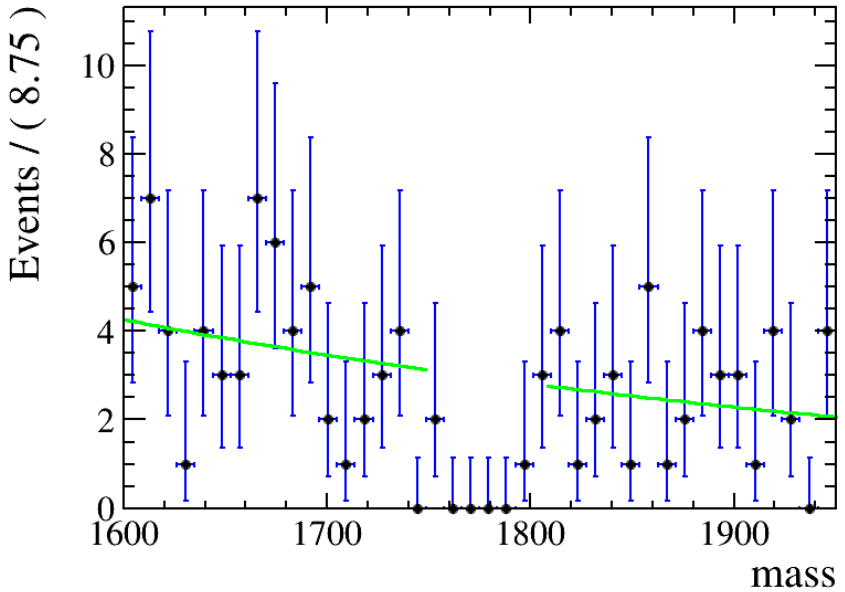
# Blending - HOW TO

1. The response is made to be flat in terms of signal efficiency(as Bs2mumu)
2. This caused confusion if we changed the contribution behaviour.
3. Made cross check which flaten old MVA and nothing changed.

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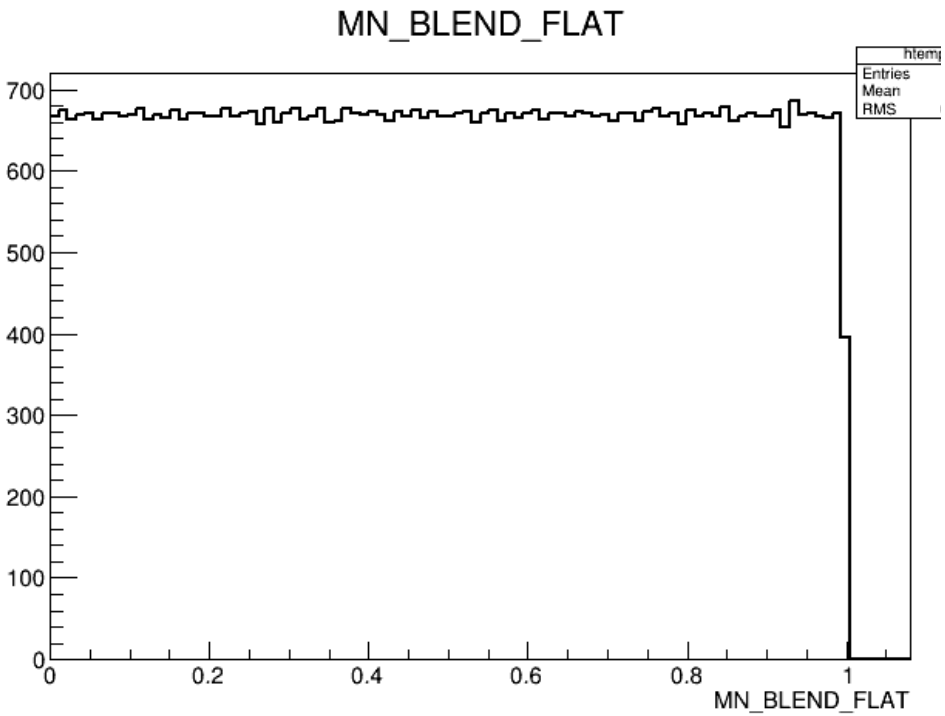
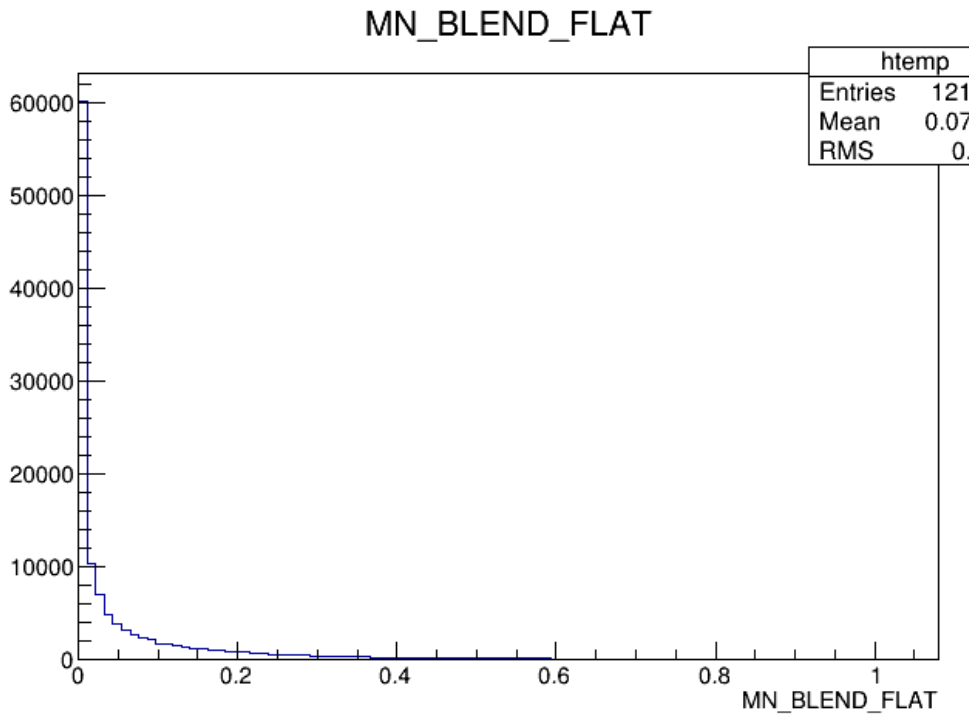
# Why so good?

1. Look how nice the BLEND looks like:

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# Method of moments

1. Lets start from from PDF:

$$PDF = \frac{9}{32\pi} S_{1s} sin^2\theta_k + S_{1c} cos^2\theta_k + (S_{2s} sin^2\theta_k + S_{2c} cos^2) cos2\theta_l + J_3 sin^2\theta_k sin^2\theta_l cos2\phi + J_4 sin2\theta_k sin\theta_l cos\phi + J_5 sin2\theta_k sin\theta_l cos\phi + (J_6 ssin^2\theta_k + J_6 ccos^2\theta_k) cos\theta_l + J_7 sin2\theta_k sin\theta_l sin\phi + J_8 sin2\theta_k sin2\theta_l sinphi + J_9 sin^2\theta_k sin^2\theta_l sin2\phi \quad (1)$$

1. Now let's start calculate the moments:

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# Method of moments

$$\int PDF \sin^2\theta_k \sin^2\theta_l \cos 2\phi = \frac{8J_3}{25} \tag{2}$$

$$\int PDF \sin 2\theta_k \sin 2\theta_l \cos\phi = \frac{8J_4}{25} \tag{3}$$

$$\int PDF \sin 2\theta_k \sin 2\theta_l \cos\phi = \frac{8J_4}{25} \tag{4}$$

$$\int PDF \sin 2\theta_k \sin\theta_l \cos\phi = \frac{2J_5}{5} \tag{5}$$

$$\int PDF \cos\theta_l = J_{6c}/4 + J_{6s}/2 \tag{6}$$

$$\int PDF \sin 2\theta_k \cos\theta_l = 0.1(J_{6c} + 4J_{6s}) \tag{7}$$

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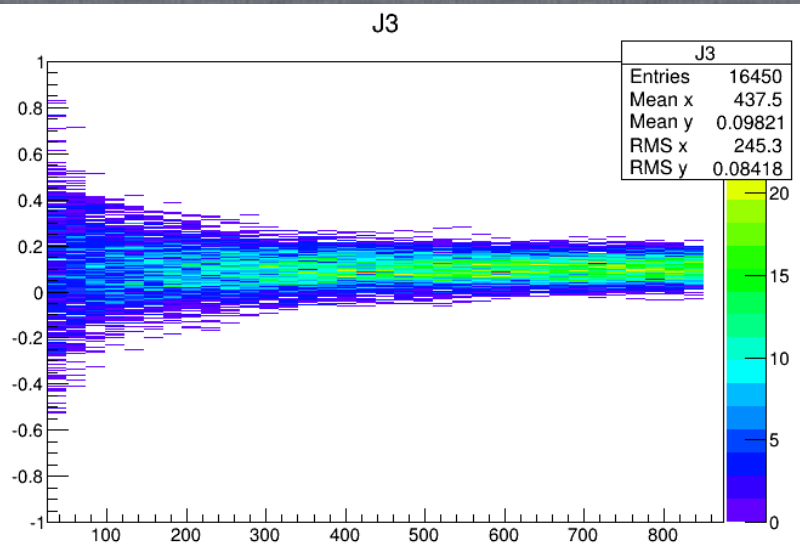
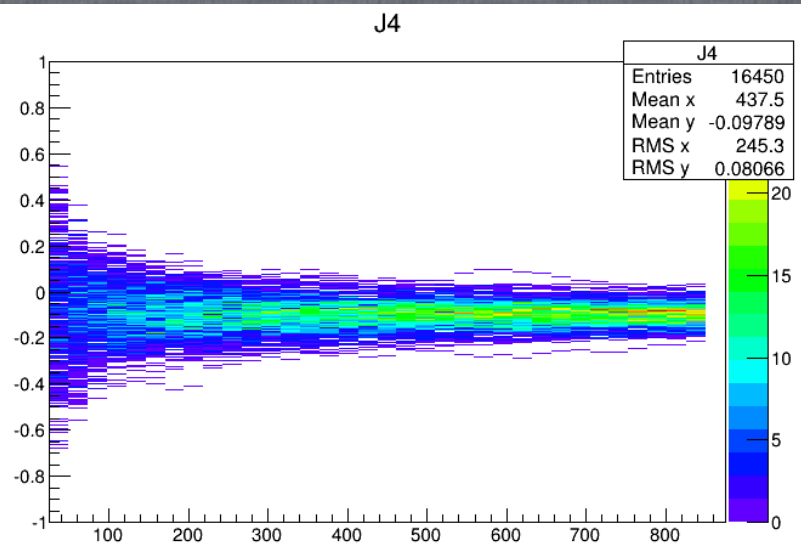
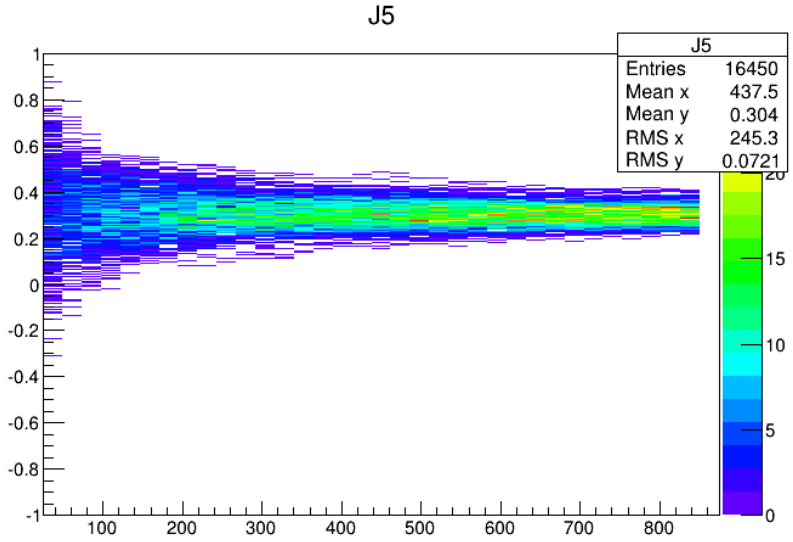
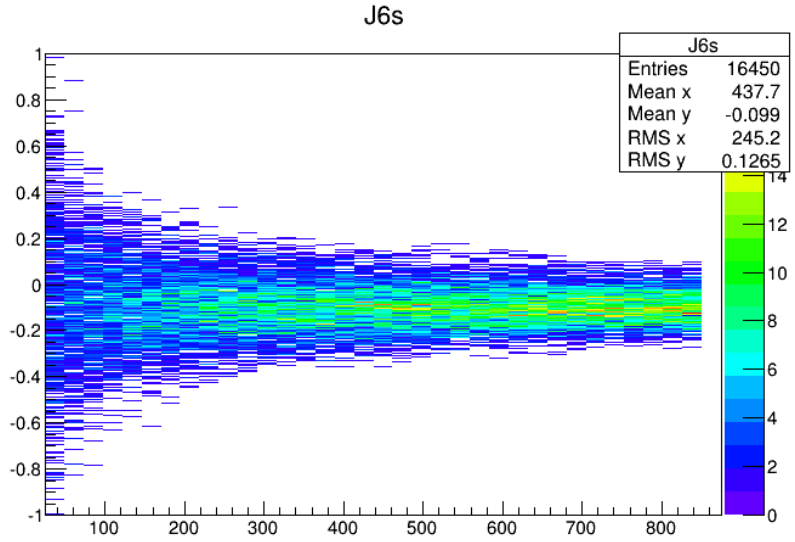
# Method of moments

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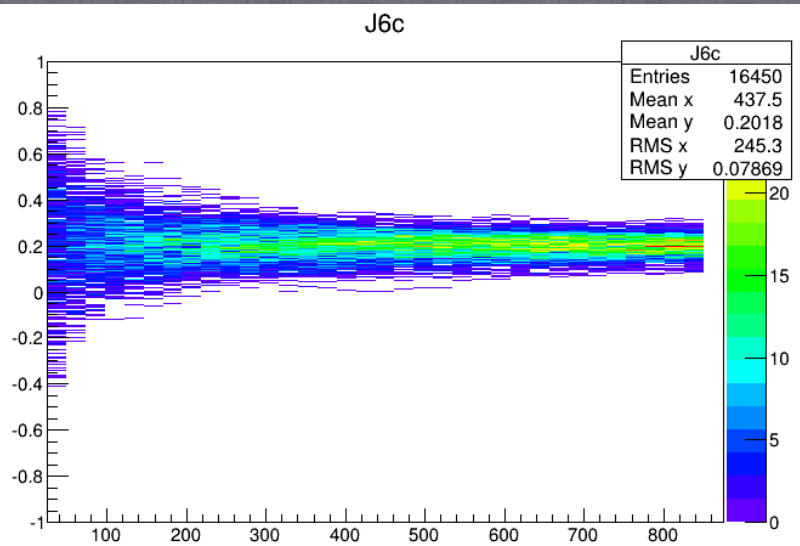
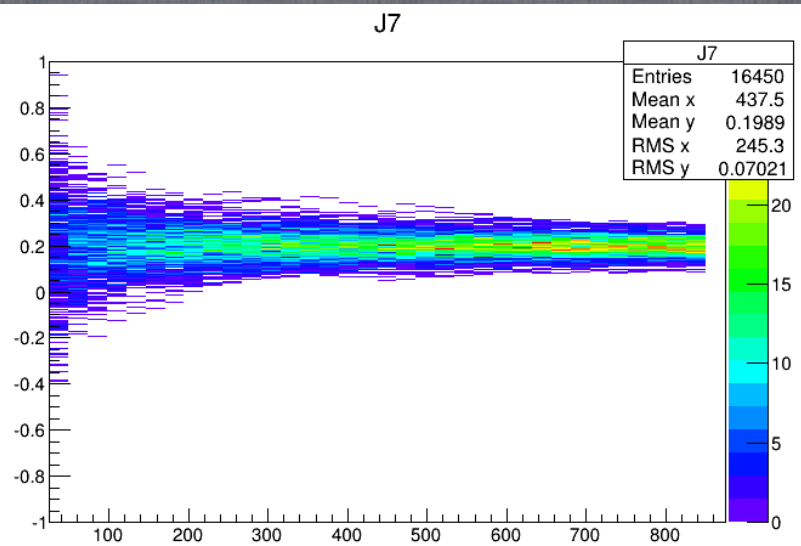
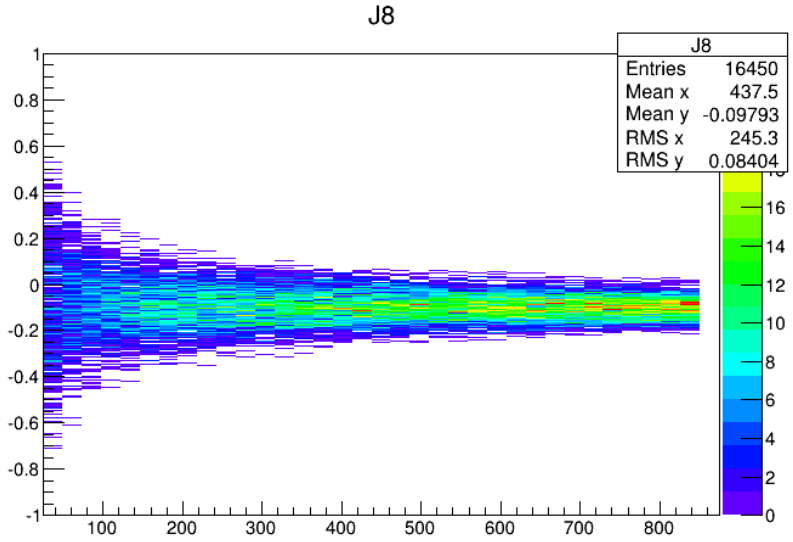
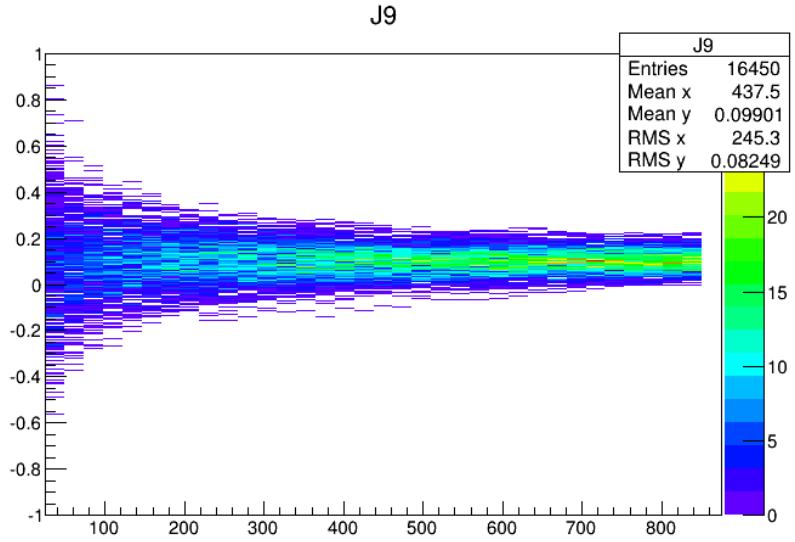
# Method of moments

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