

Run 3 Forward Electron Energy Calibration in ATLAS

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DESY

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$$\frac{\sigma_E}{E} = \frac{a}{\sqrt{E}} \oplus \frac{b}{E} \oplus c \quad (1)$$

$$\left(\frac{\sigma}{E}\right)^2 = \quad (2)$$

- STEP 1: Skimming ntuples
- STEP 2: Histogramming E_{reco}/E_{true}
- STEP 3: Extracting σ from histograms
- STEP 3+: Plotting σ dependence over μ
- BONUS 1: Add cookie-cutting
- BONUS 2: Repeat the study for central electrons

- **Binning in η_{probe} ($N_\eta = 9$ edges):**

$\{2.5, 2.6, 2.75, 2.85, 2.95, 3.1, 3.35, 3.6, 4.0, 4.9\}$

- **Binning in η_{tag} ($N_\eta = 8$ bins):**

$\{0.0, 0.9, 1.37, 1.52, 1.81, 2.0, 2.15, 2.3, 2.5\}$

- **Binning in p_T ($N_{p_T} = 7$ bins):**

$\{20, 25, 30, 35, 40, 45, 80, 1000\}$ GeV

- **Binning in μ ($N_\mu = 6$ bins):**

$\{0, 30, 40, 50, 60, 70, 100\}$

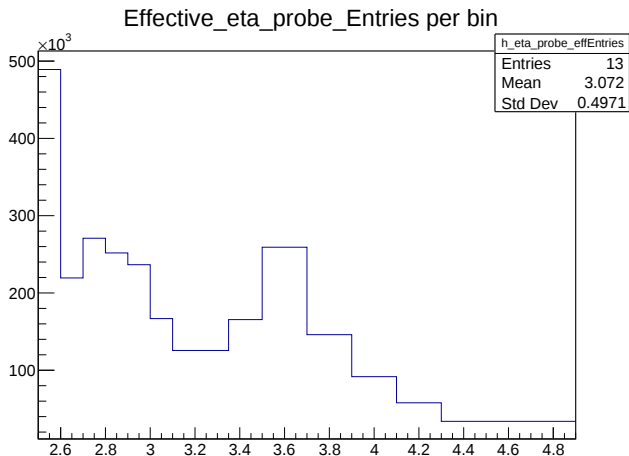


Figure: Effective statistics for different η_{probe} binning

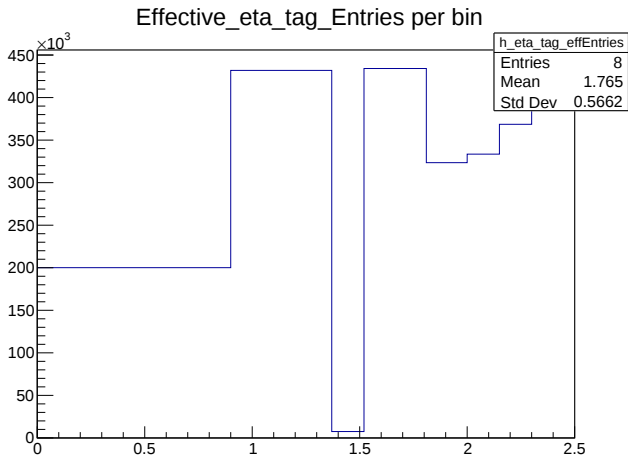


Figure: Effective statistics for different η_{tag} binning

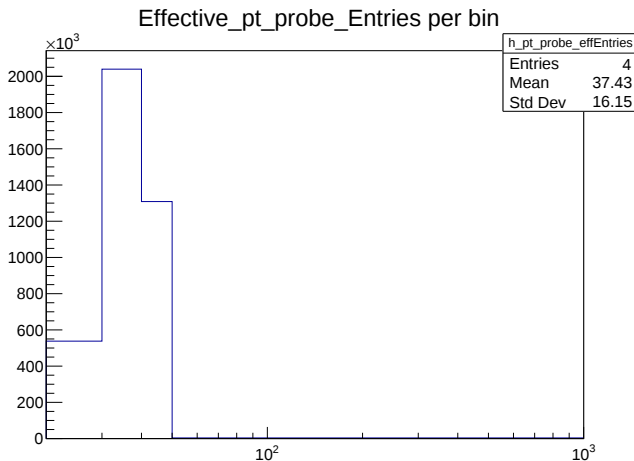


Figure: Effective statistics for different p_t^{probe} binning

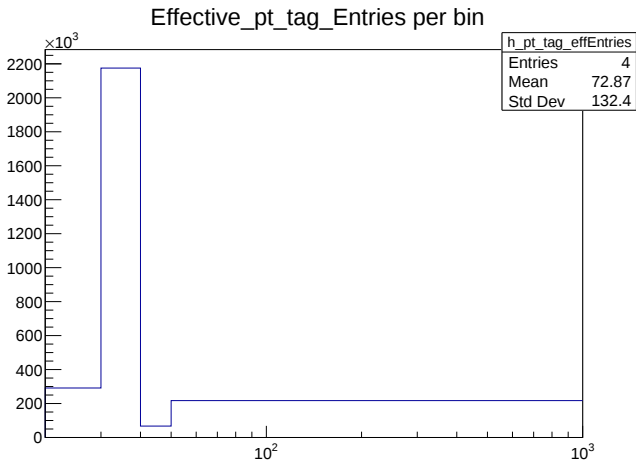


Figure: Effective statistics for different p_t^{tag} binning

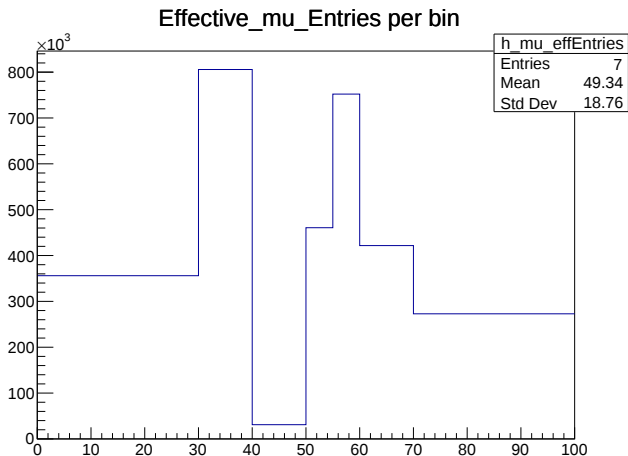
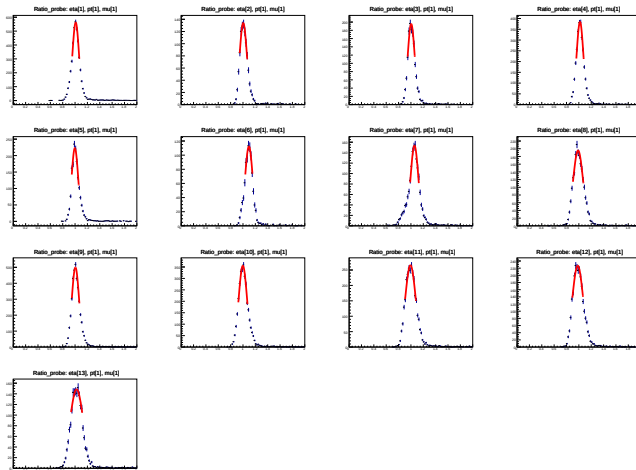
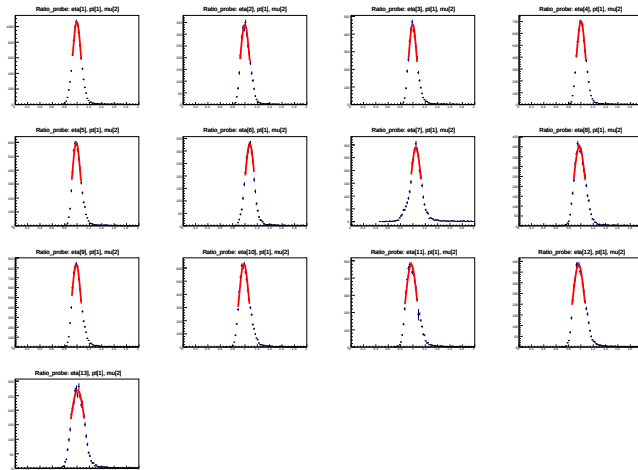


Figure: Effective statistics for different μ binning

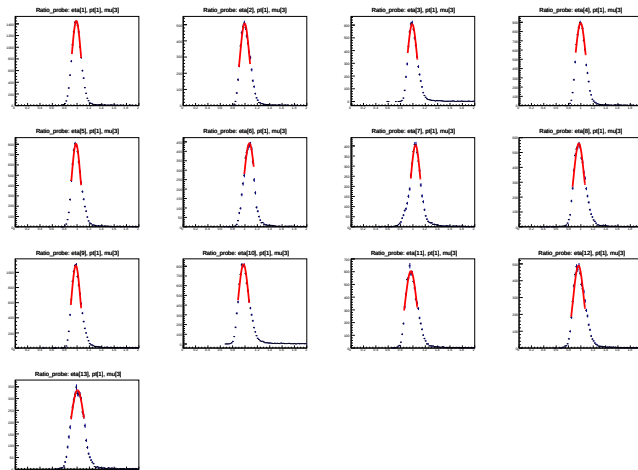
Plot p_t 1, μ 1



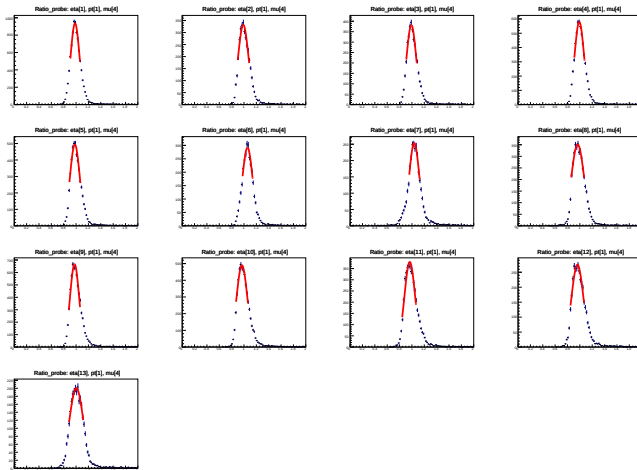
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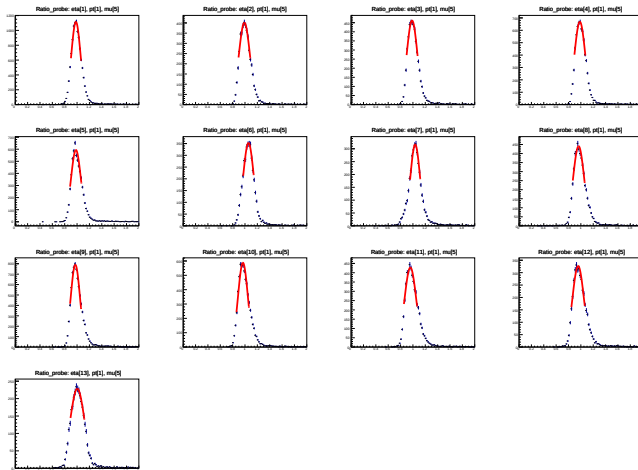
Plot p_t 1, μ 3



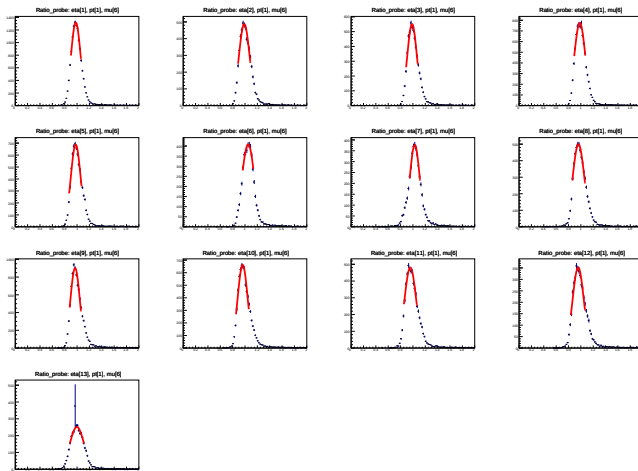
Plot p_t 1, μ 4



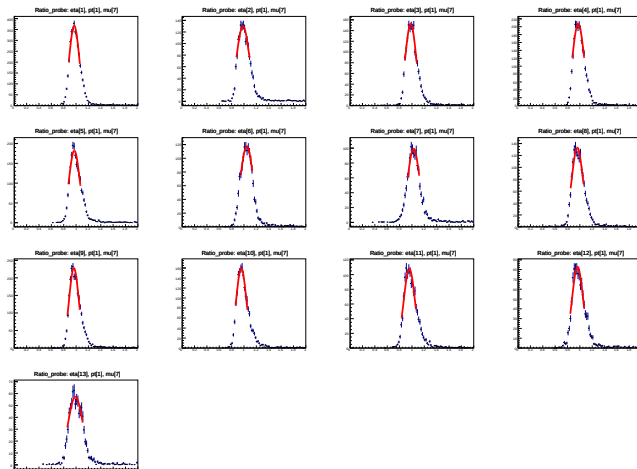
Plot p_t 1, μ 5



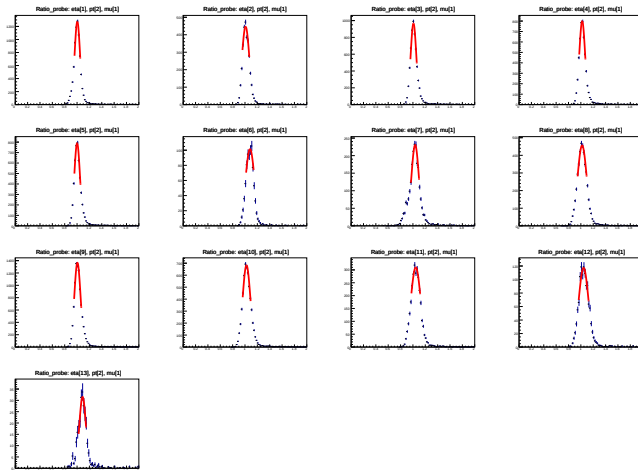
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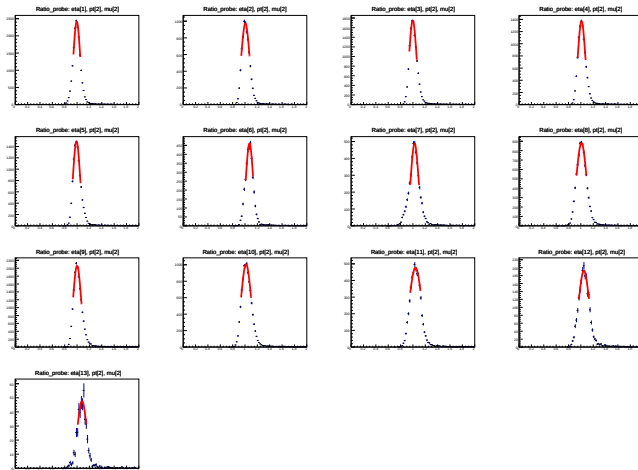
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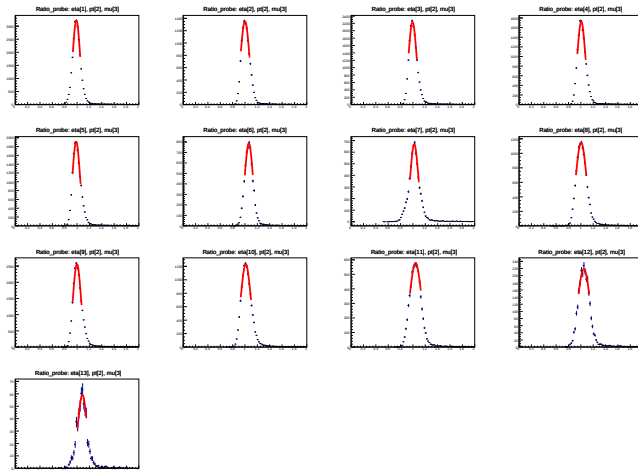
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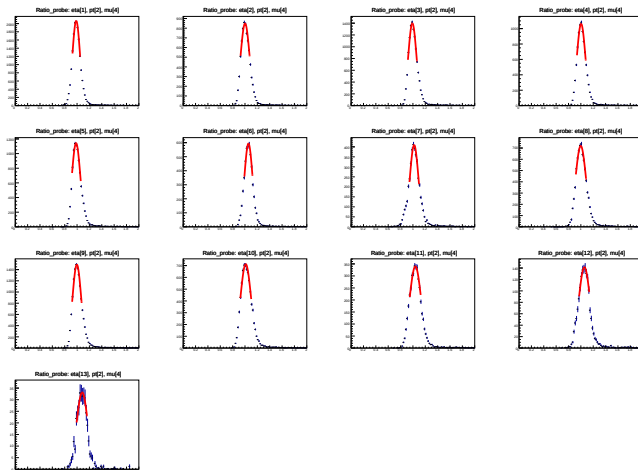
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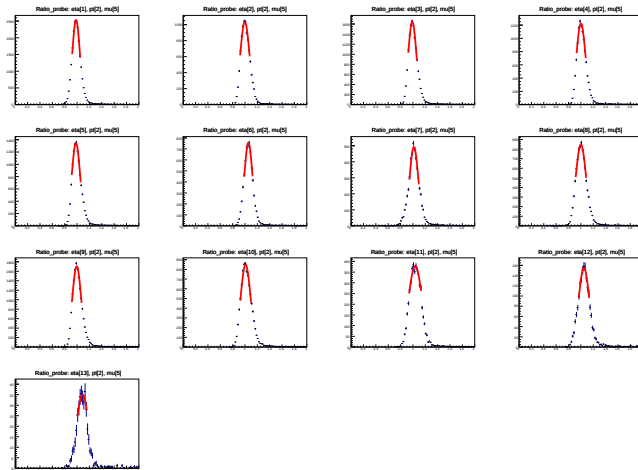
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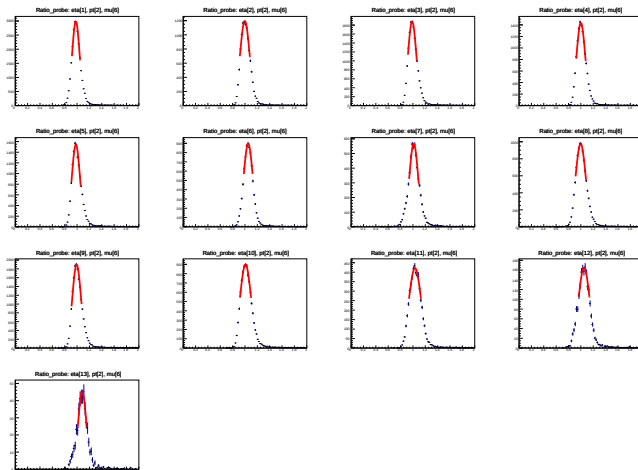
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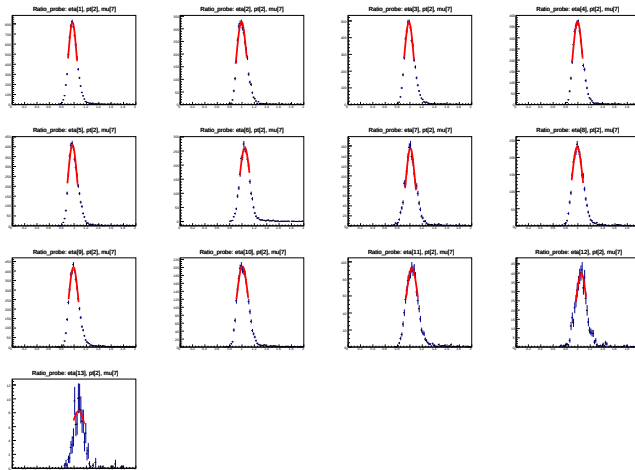
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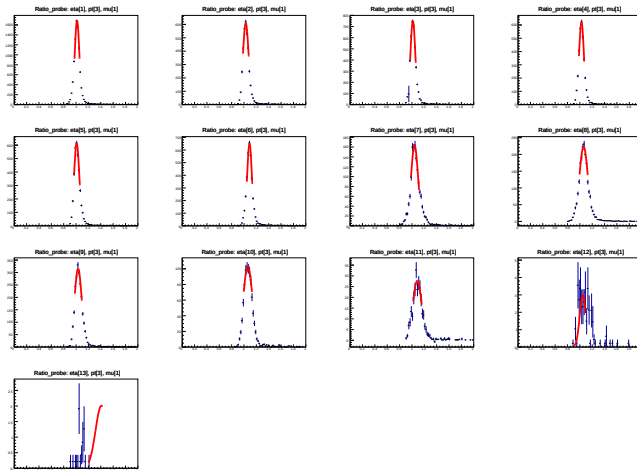
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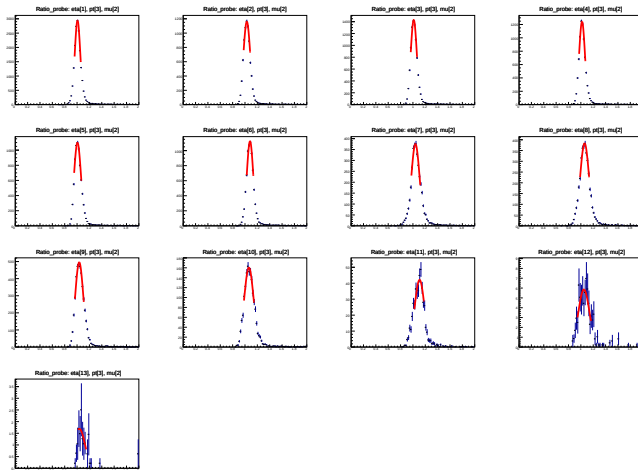
Plot p_t 2, μ 7



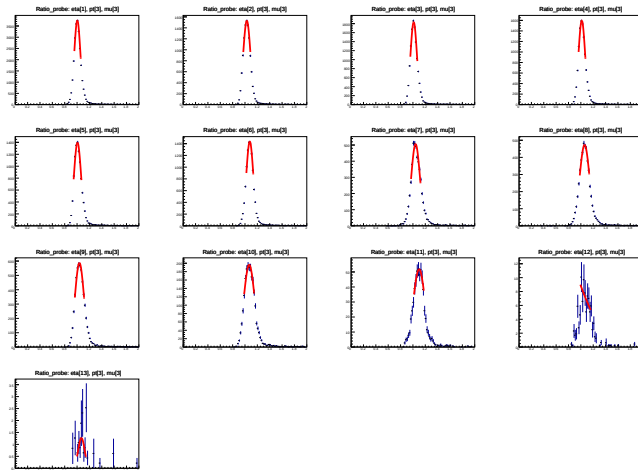
Plot p_t 3, μ 1



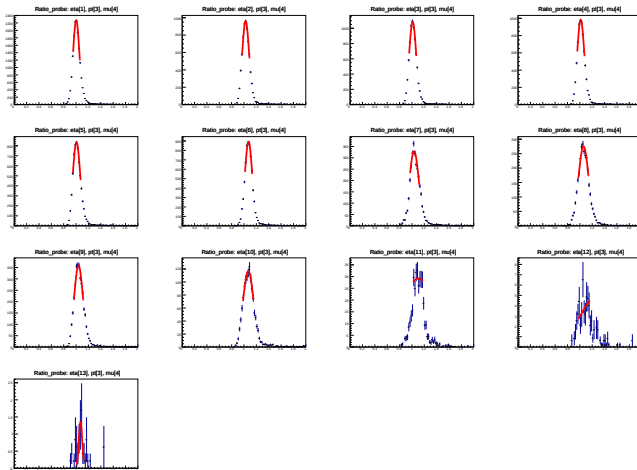
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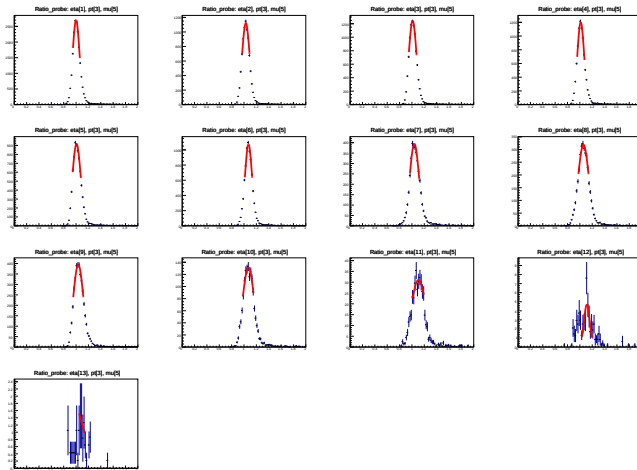
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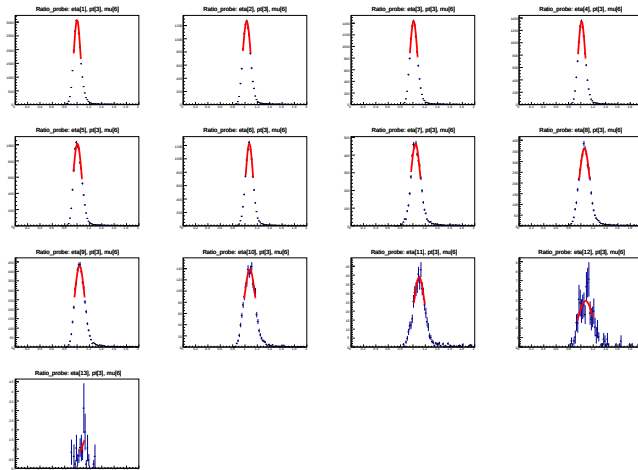
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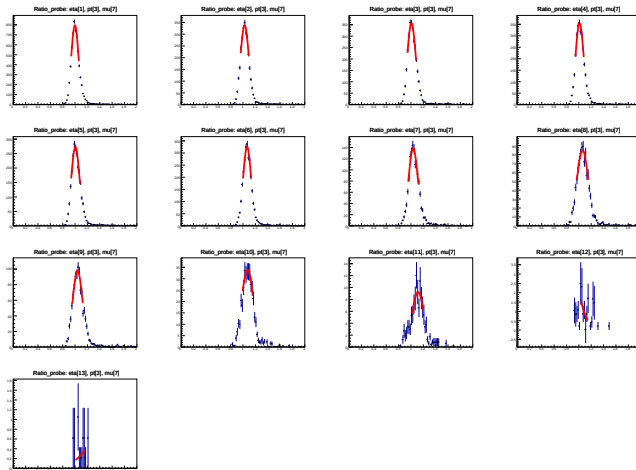
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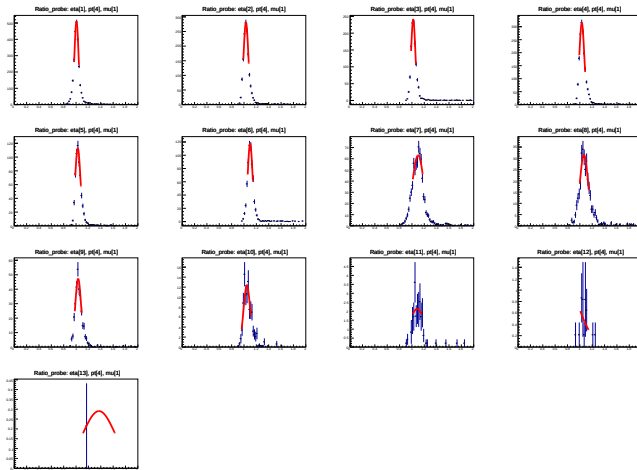
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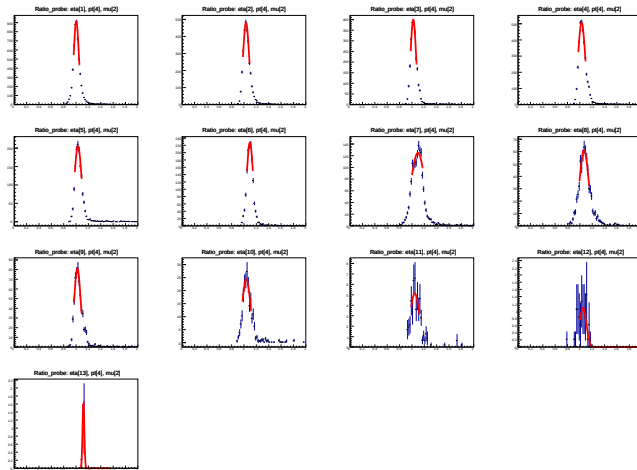
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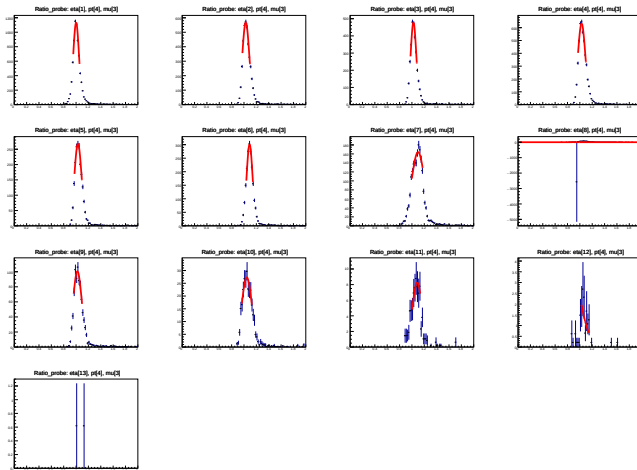
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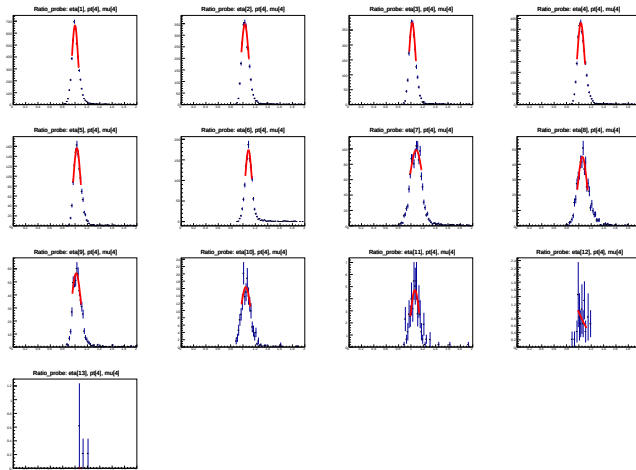
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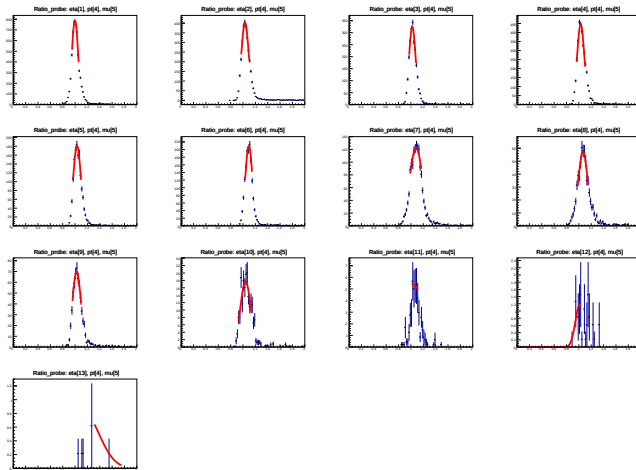
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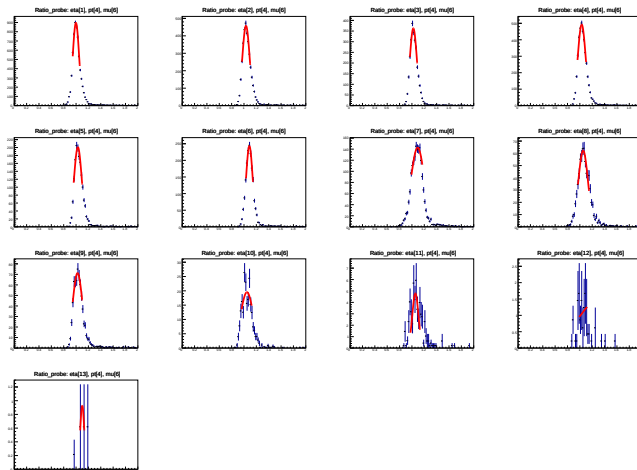
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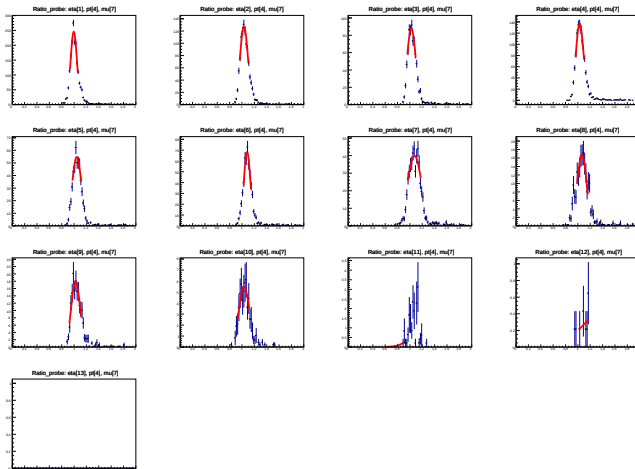
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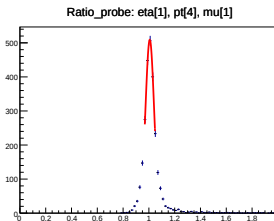
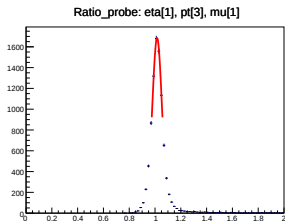
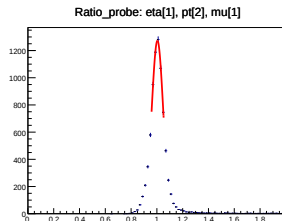
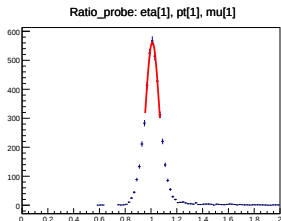
Plot p_t 4, μ 6



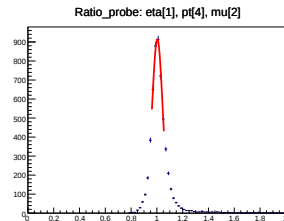
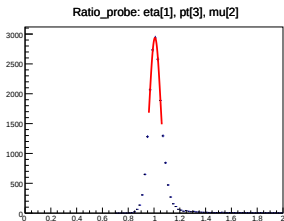
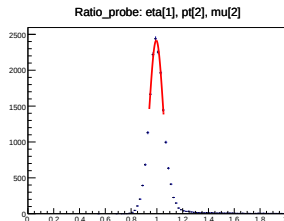
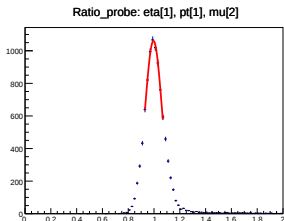
Plot p_t 4, μ 7



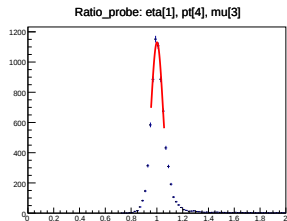
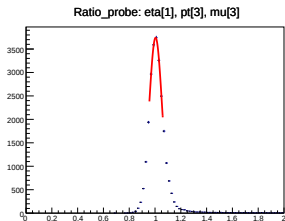
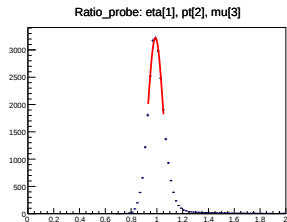
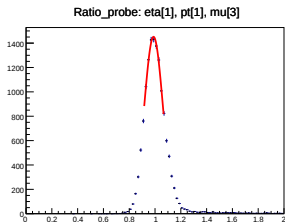
Plot η 1, μ 1



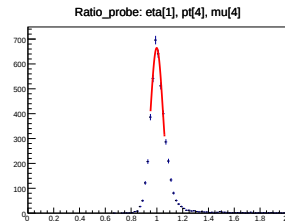
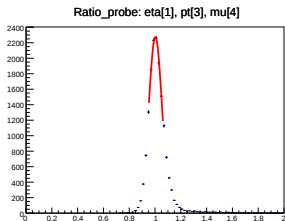
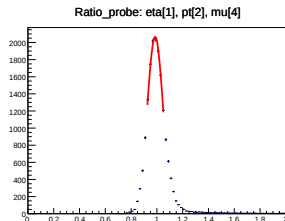
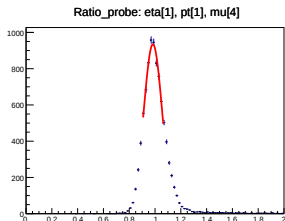
Plot η 1, μ 2



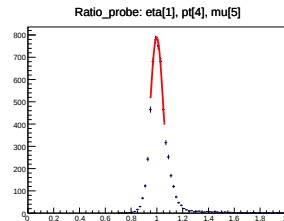
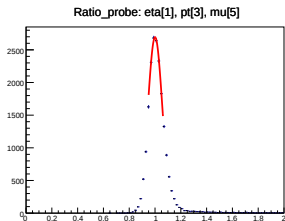
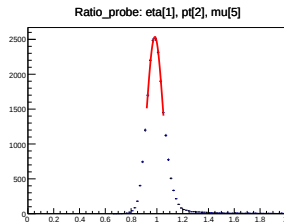
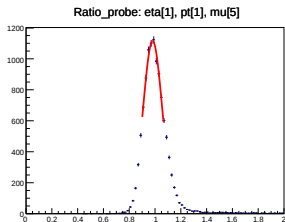
Plot η 1, μ 3



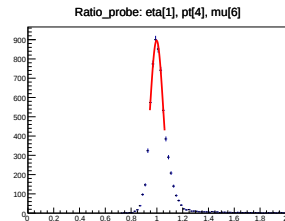
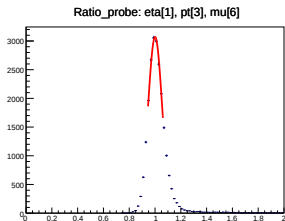
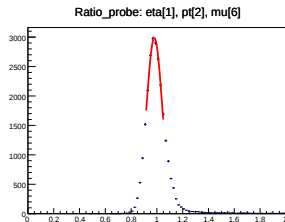
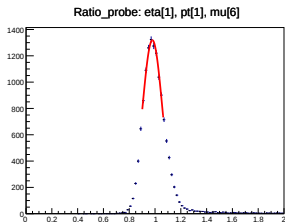
Plot η 1, μ 4



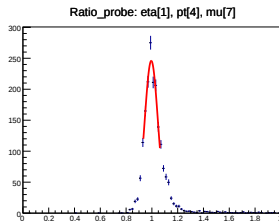
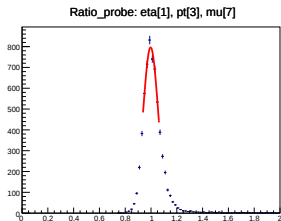
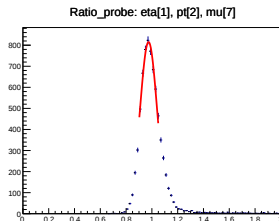
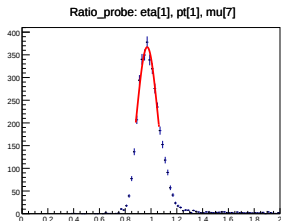
Plot η 1, μ 5



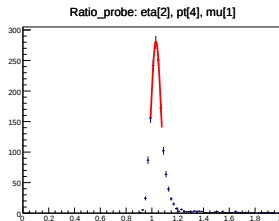
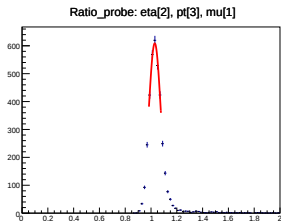
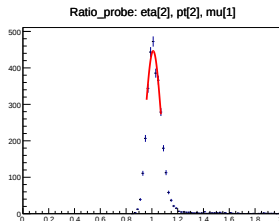
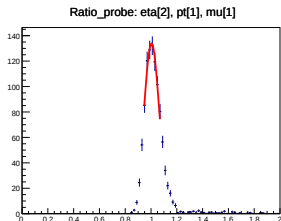
Plot η 1, μ 6



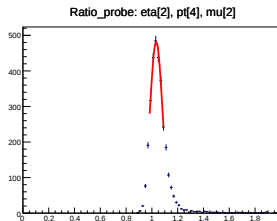
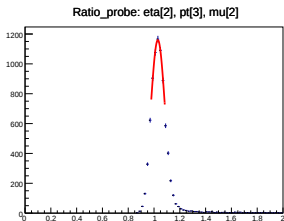
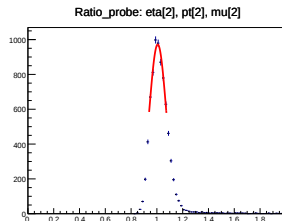
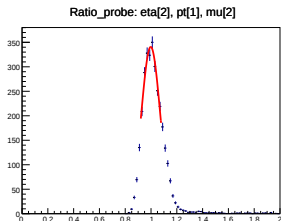
Plot η 1, μ 7



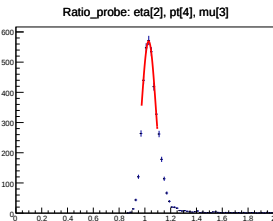
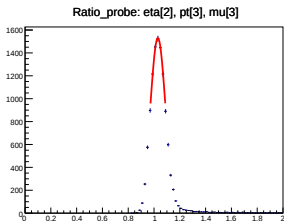
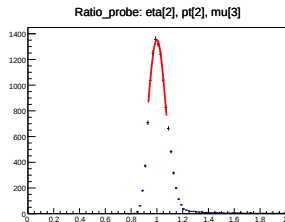
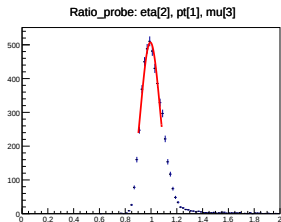
Plot η 2, μ 1



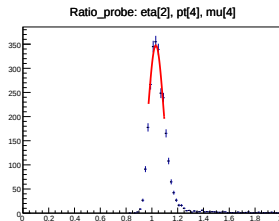
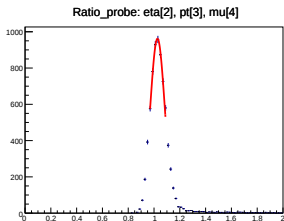
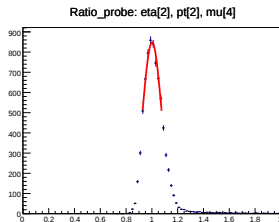
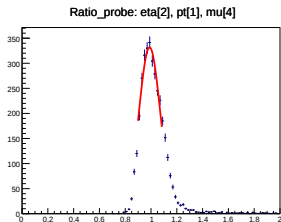
Plot η 2, μ 2



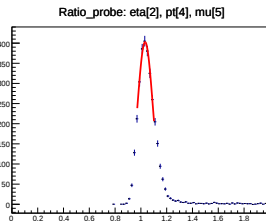
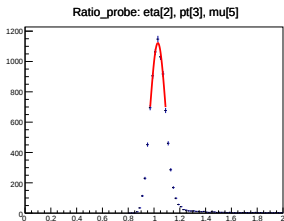
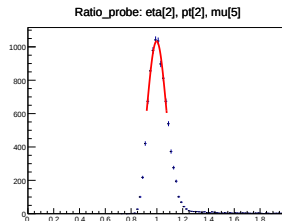
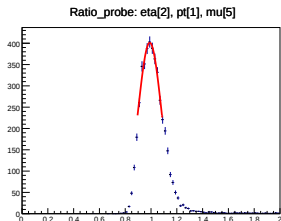
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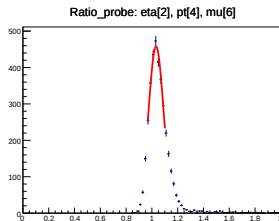
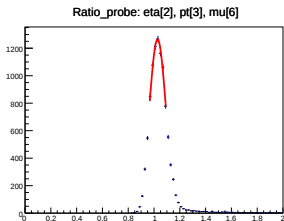
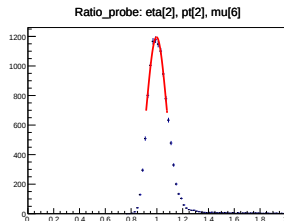
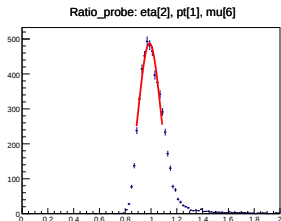
Plot η 2, μ 4



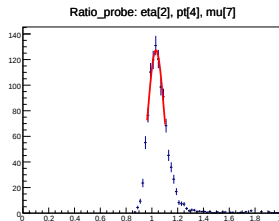
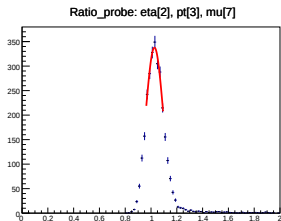
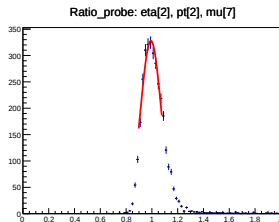
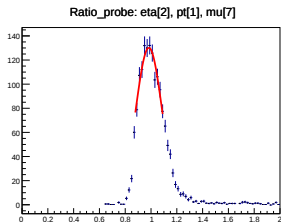
Plot η 2, μ 5



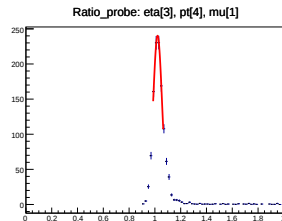
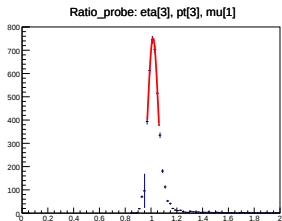
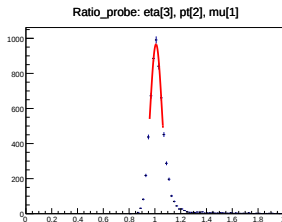
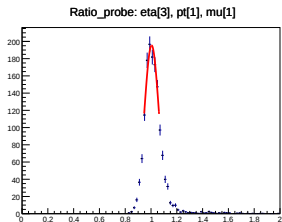
Plot η 2, μ 6



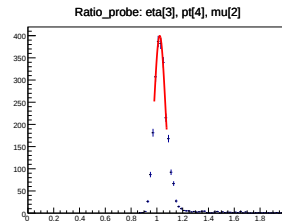
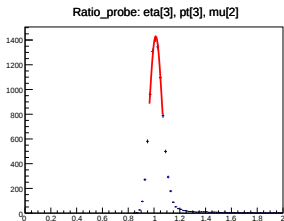
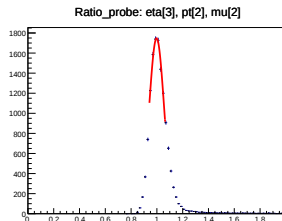
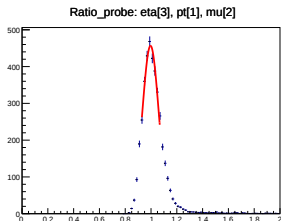
Plot η 2, μ 7



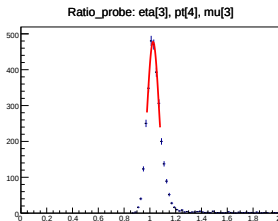
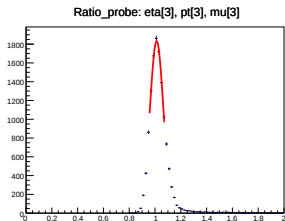
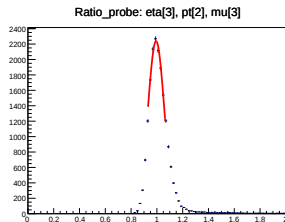
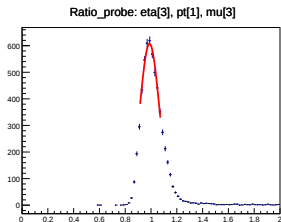
Plot η 3, μ 1



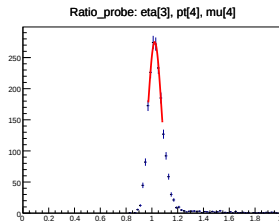
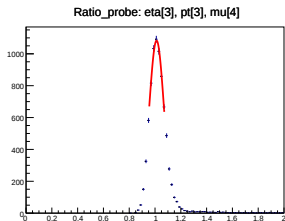
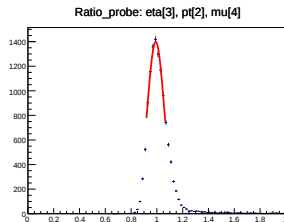
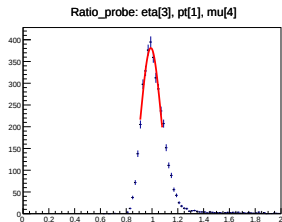
Plot η 3, μ 2



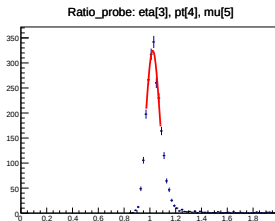
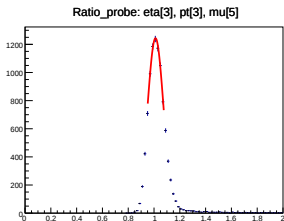
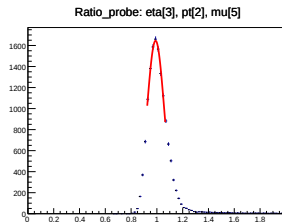
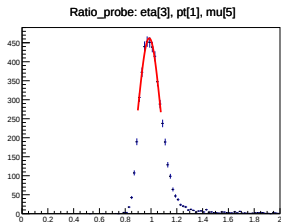
Plot η 3, μ 3



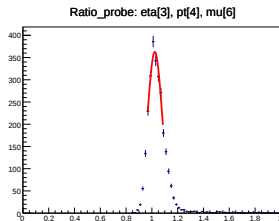
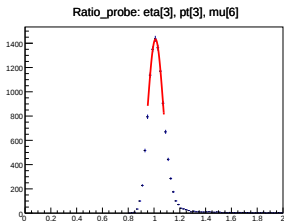
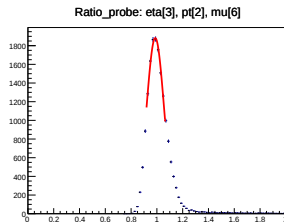
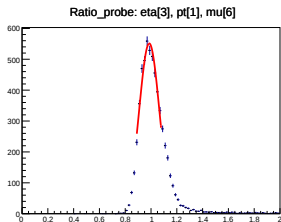
Plot η 3, μ 4



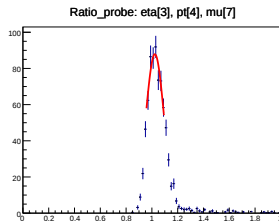
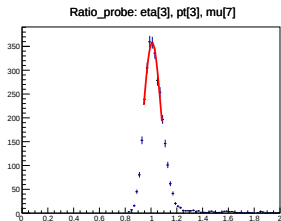
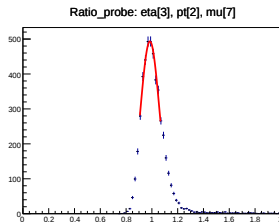
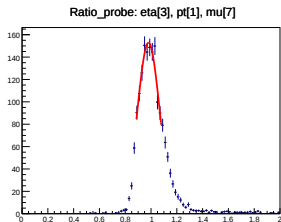
Plot η 3, μ 5



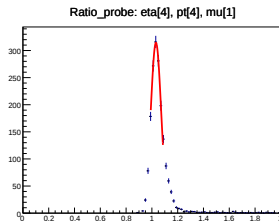
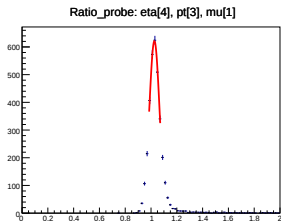
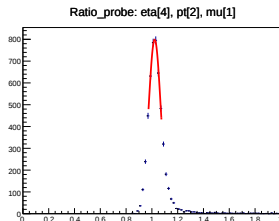
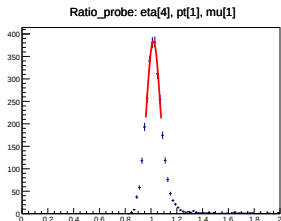
Plot η 3, μ 6



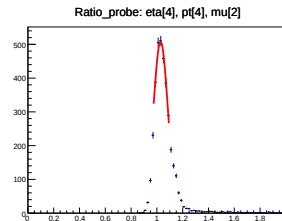
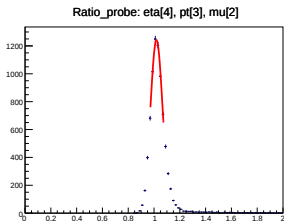
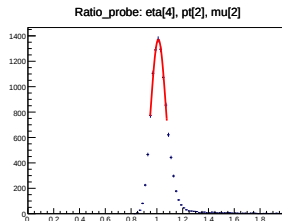
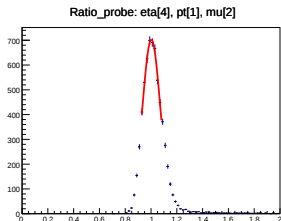
Plot η 3, μ 7



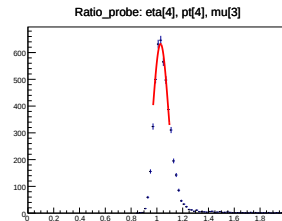
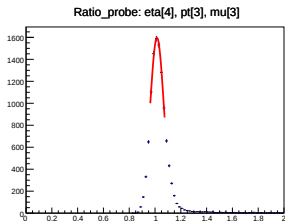
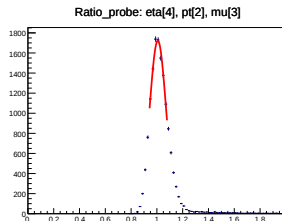
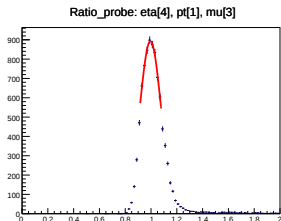
Plot η 4, μ 1



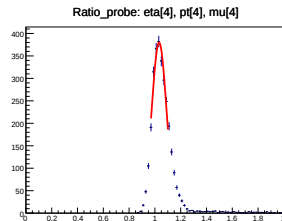
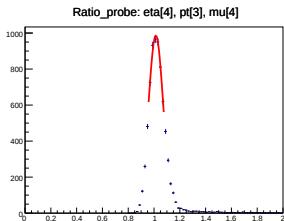
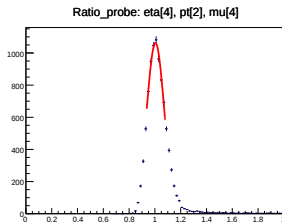
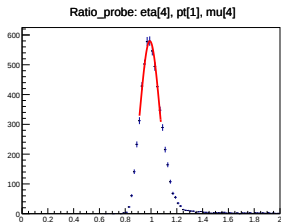
Plot η 4, μ 2



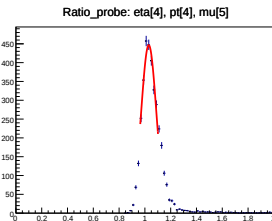
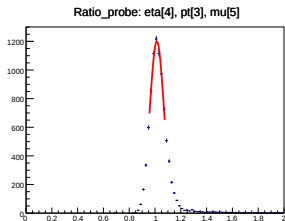
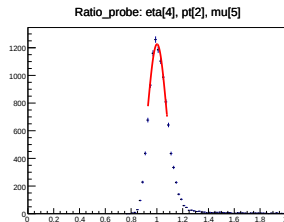
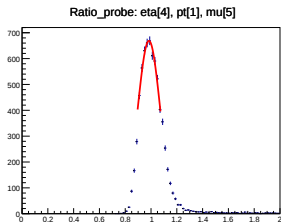
Plot η 4, μ 3



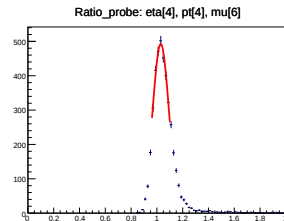
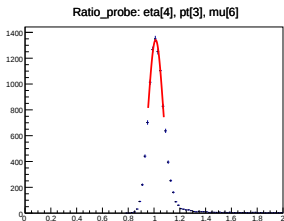
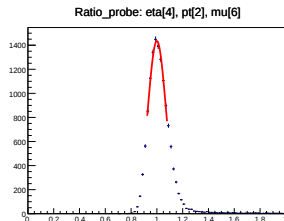
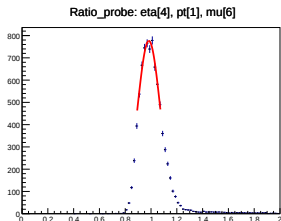
Plot η 4, μ 4



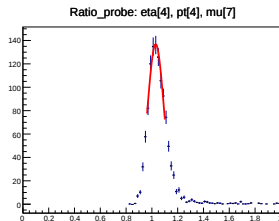
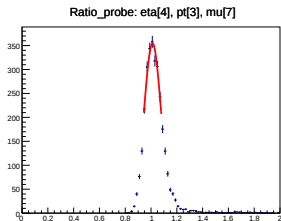
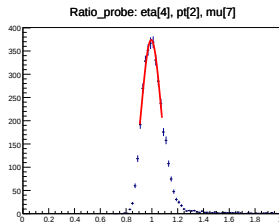
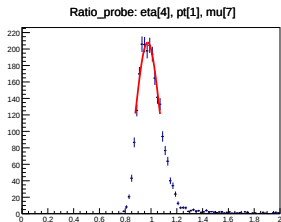
Plot η 4, μ 5



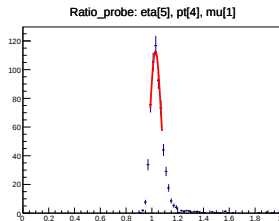
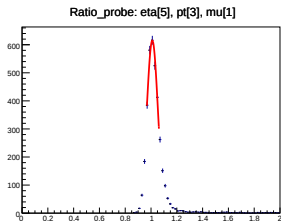
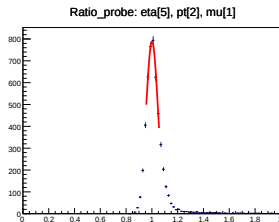
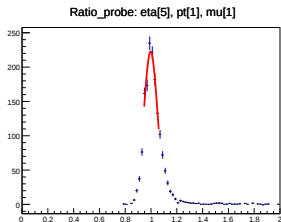
Plot η 4, μ 6



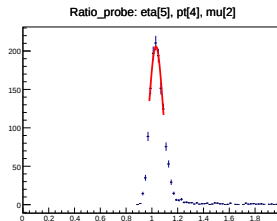
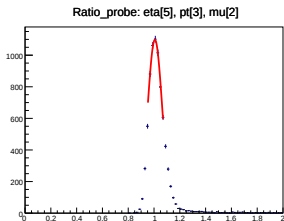
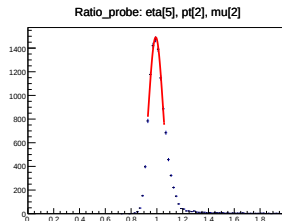
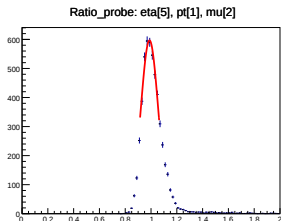
Plot η 4, μ 7



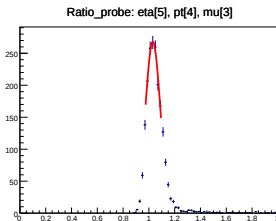
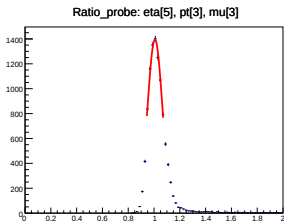
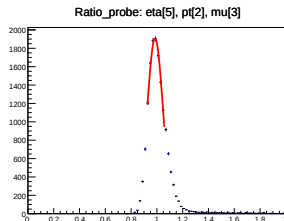
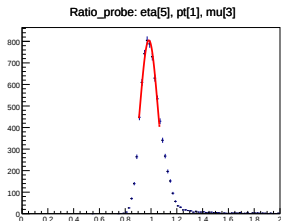
Plot η 5, μ 1



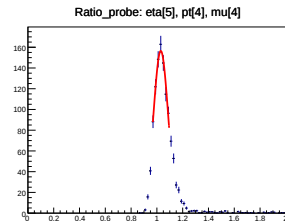
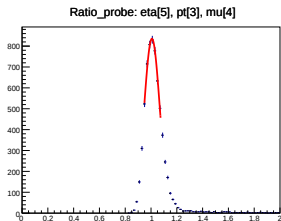
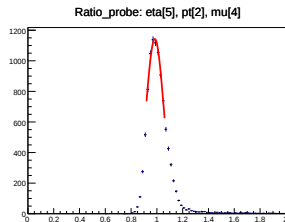
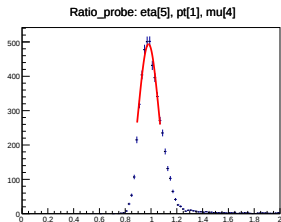
Plot η 5, μ 2



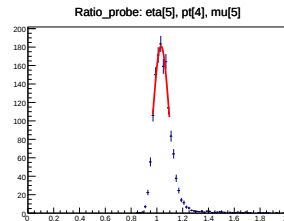
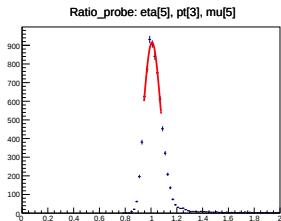
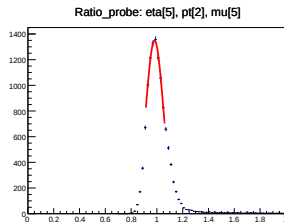
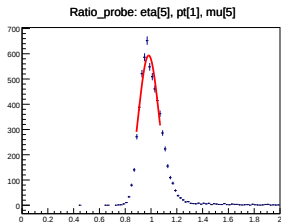
Plot η 5, μ 3



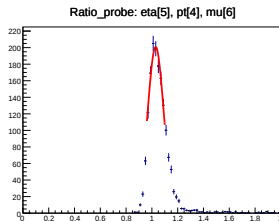
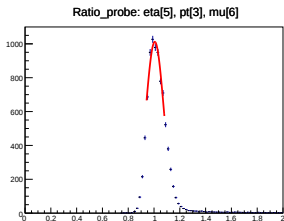
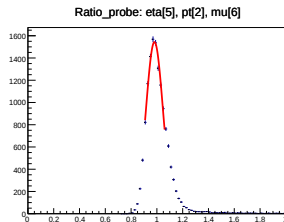
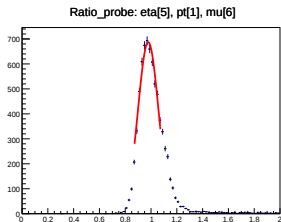
Plot η 5, μ 4



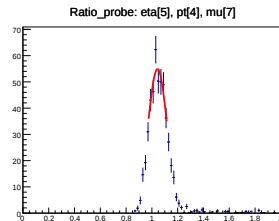
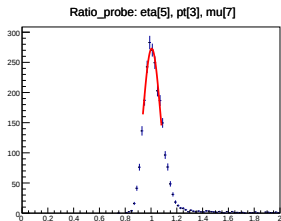
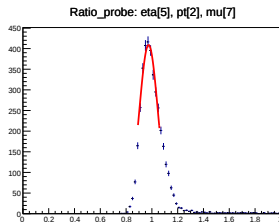
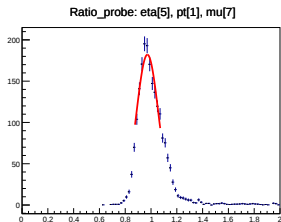
Plot η 5, μ 5



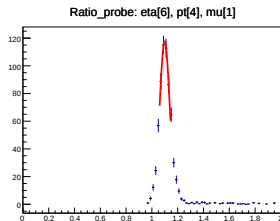
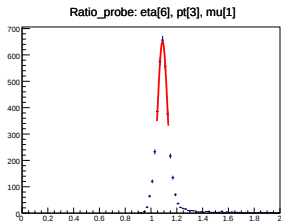
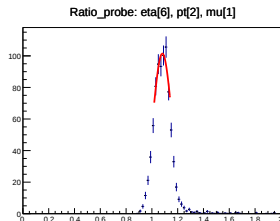
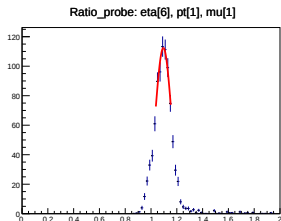
Plot η 5, μ 6



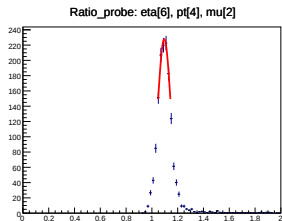
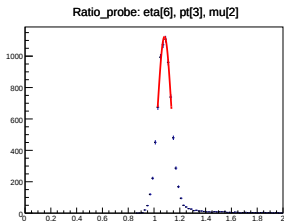
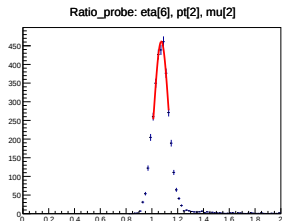
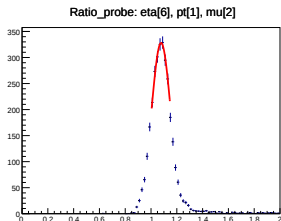
Plot η 5, μ 7



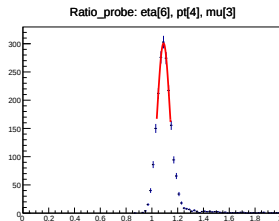
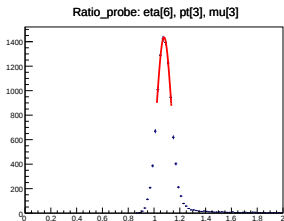
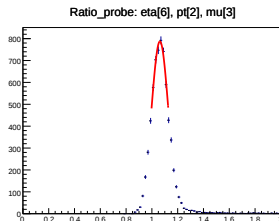
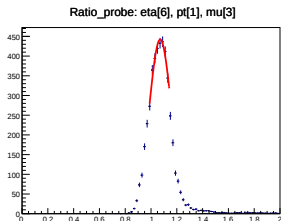
Plot η 6, μ 1



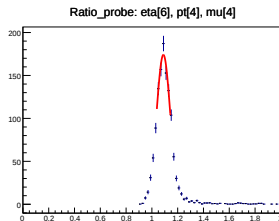
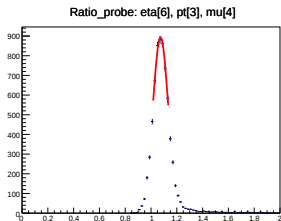
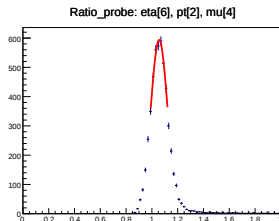
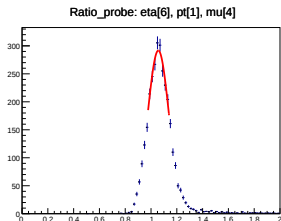
Plot η 6, μ 2



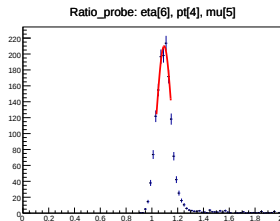
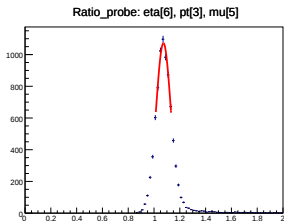
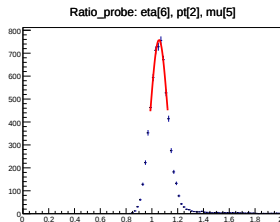
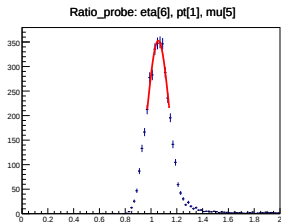
Plot η 6, μ 3



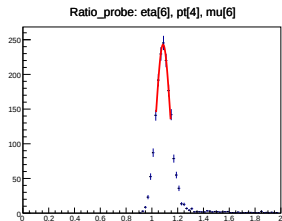
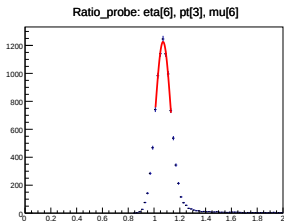
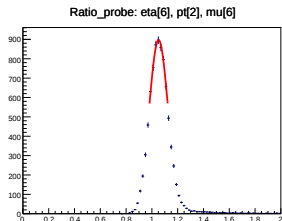
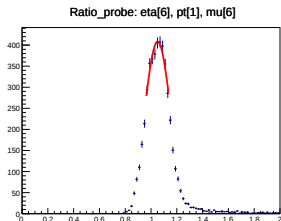
Plot η 6, μ 4



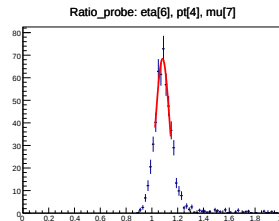
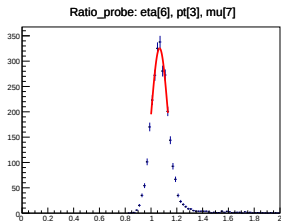
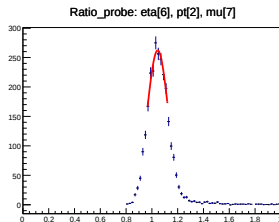
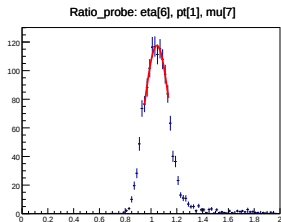
Plot η 6, μ 5



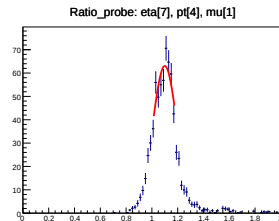
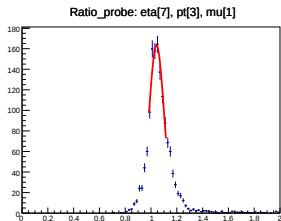
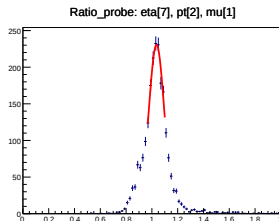
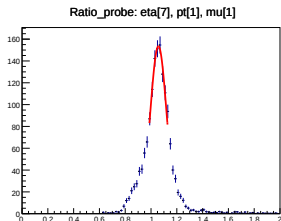
Plot η 6, μ 6



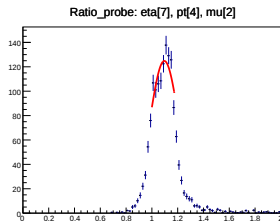
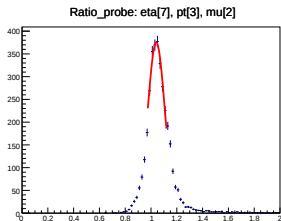
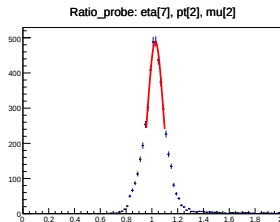
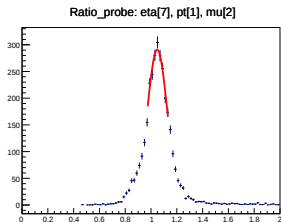
Plot η 6, μ 7



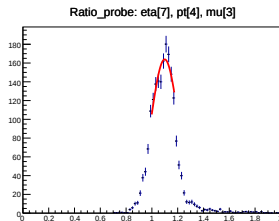
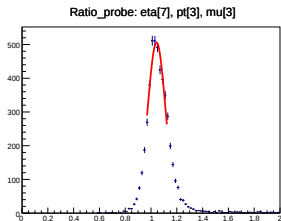
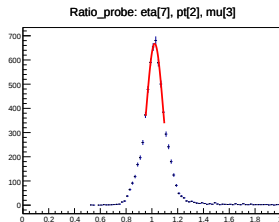
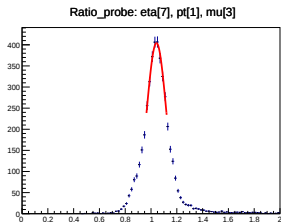
Plot η 7, μ 1



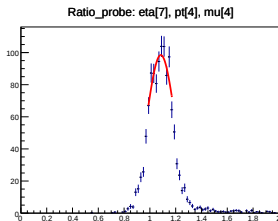
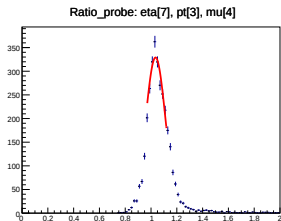
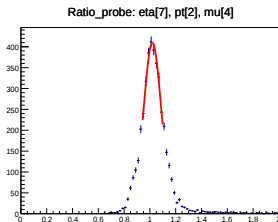
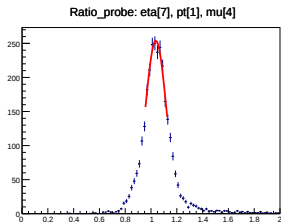
Plot η 7, μ 2



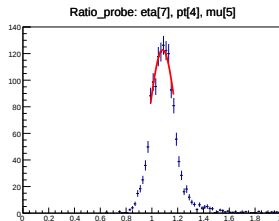
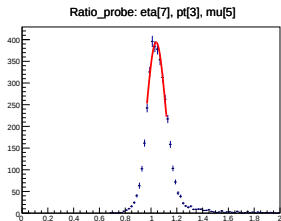
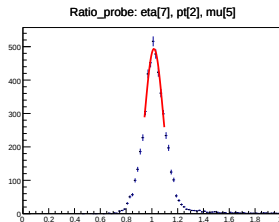
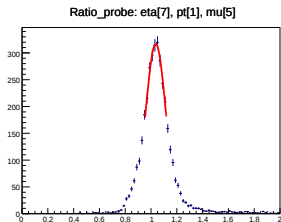
Plot η 7, μ 3



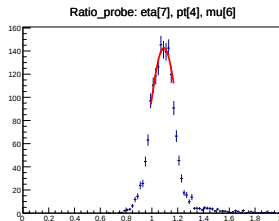
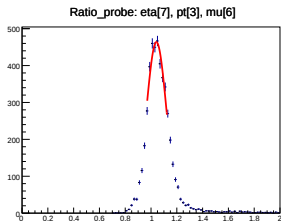
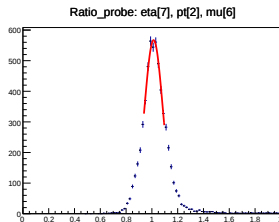
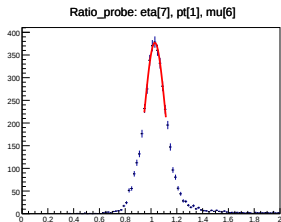
Plot η 7, μ 4



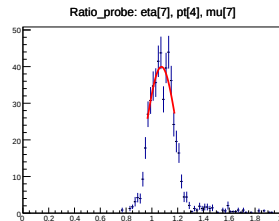
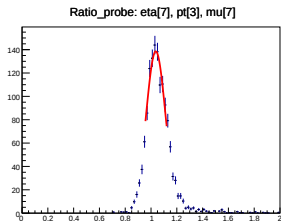
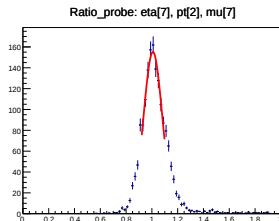
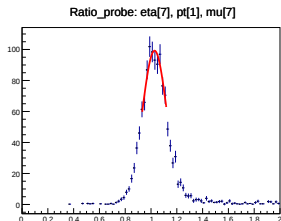
Plot η 7, μ 5



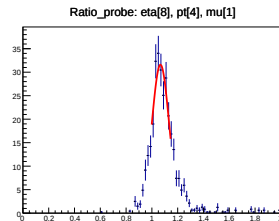
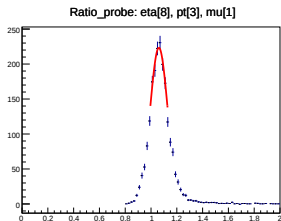
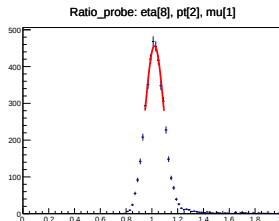
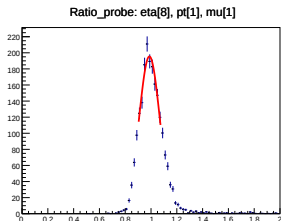
Plot η 7, μ 6



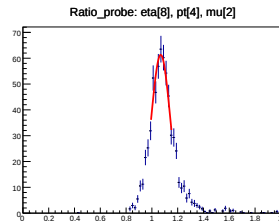
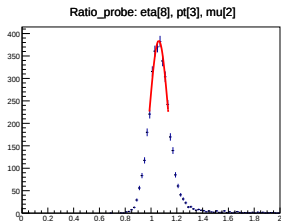
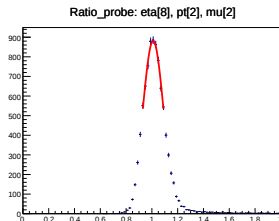
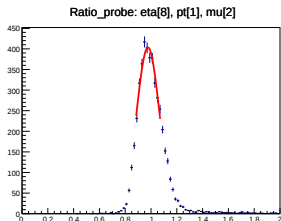
Plot η 7, μ 7



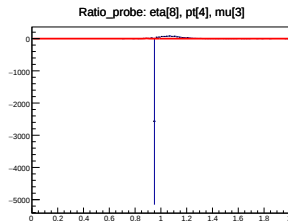
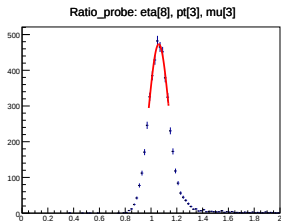
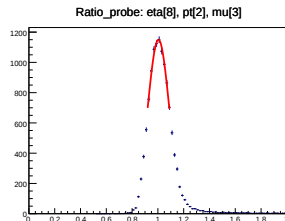
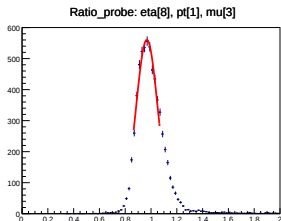
Plot η 8, μ 1



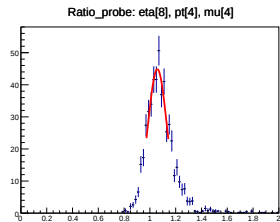
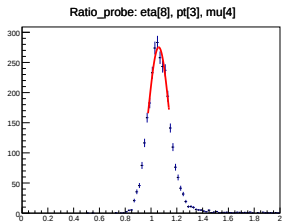
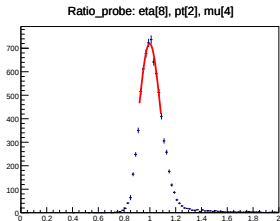
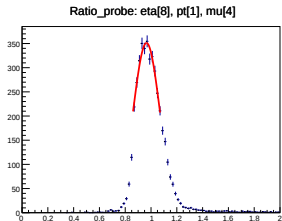
Plot η 8, μ 2



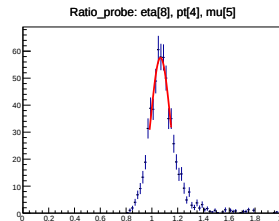
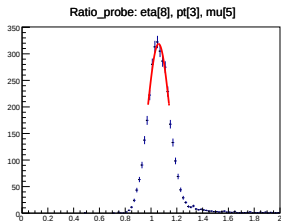
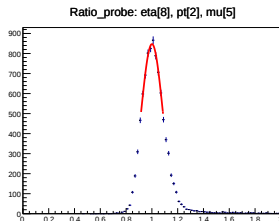
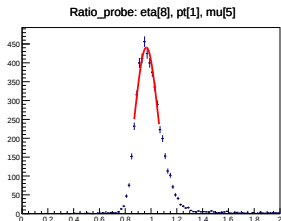
Plot η 8, μ 3



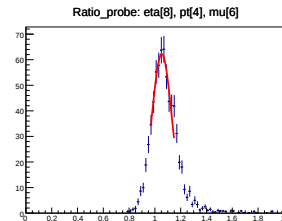
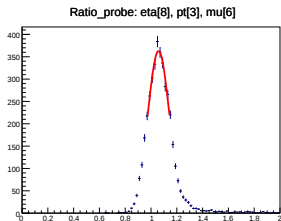
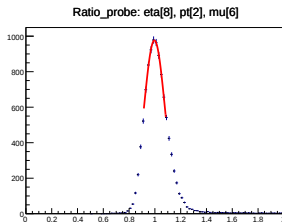
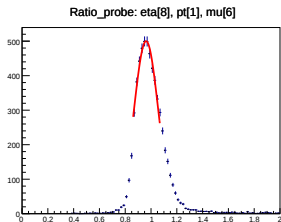
Plot η 8, μ 4



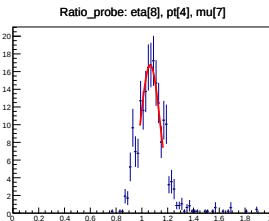
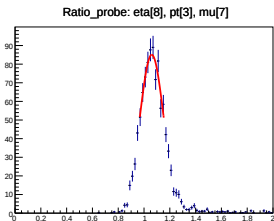
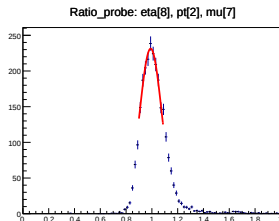
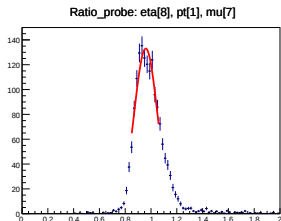
Plot η 8, μ 5



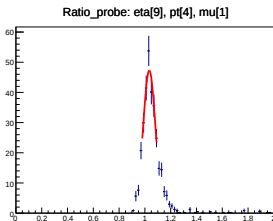
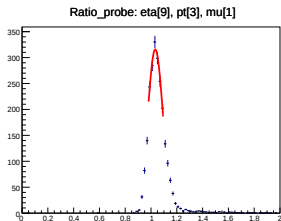
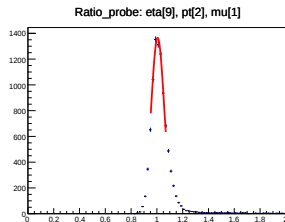
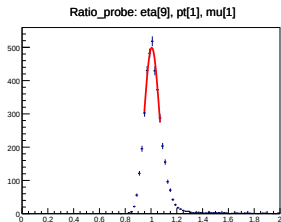
Plot η 8, μ 6



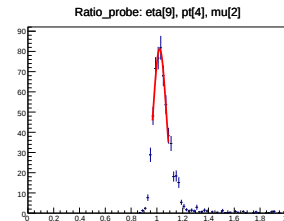
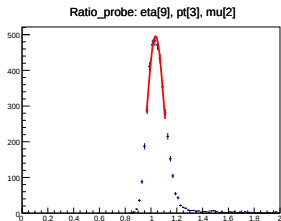
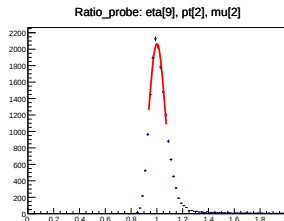
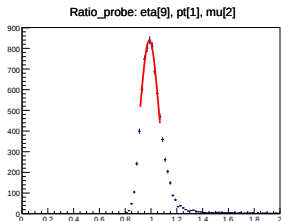
Plot η 8, μ 7



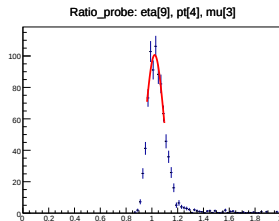
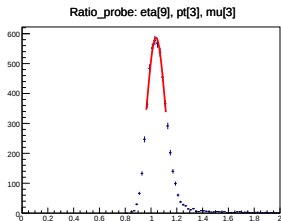
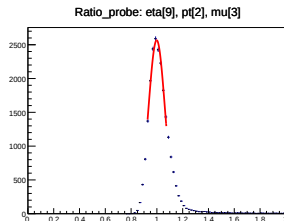
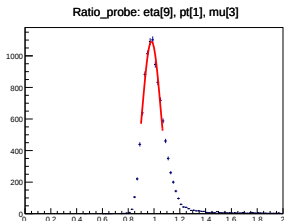
Plot η 9, μ 1



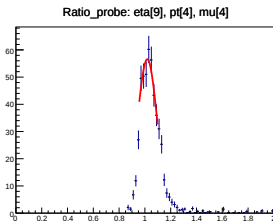
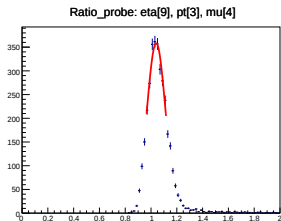
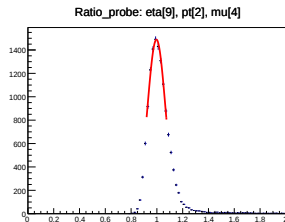
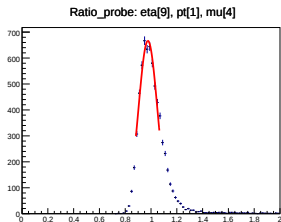
Plot η 9, μ 2



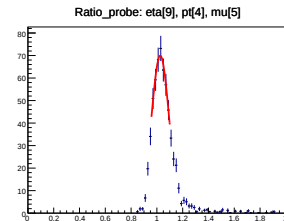
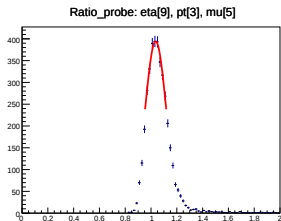
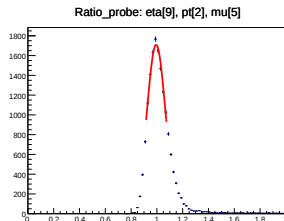
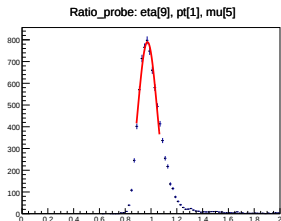
Plot η 9, μ 3



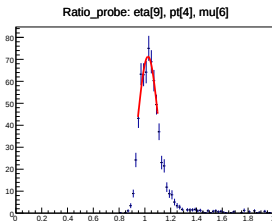
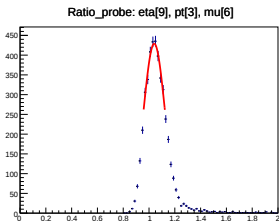
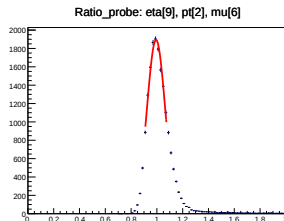
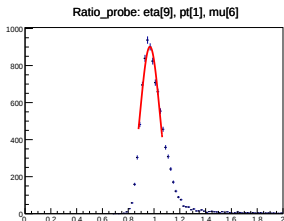
Plot η 9, μ 4



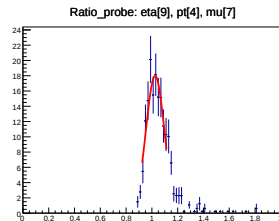
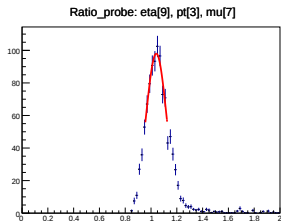
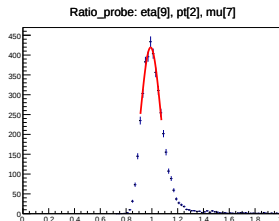
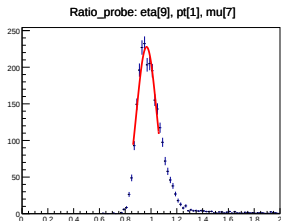
Plot η 9, μ 5



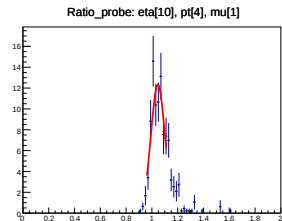
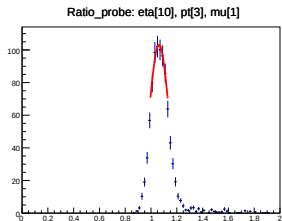
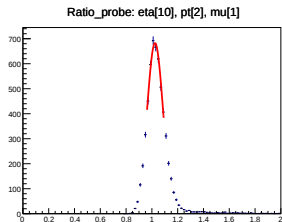
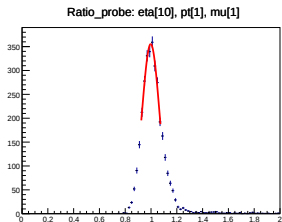
Plot η 9, μ 6



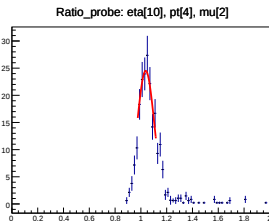
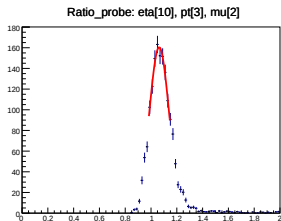
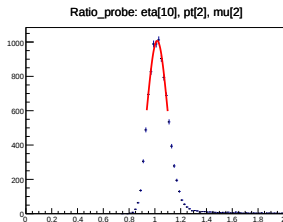
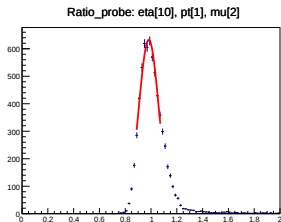
Plot η 9, μ 7



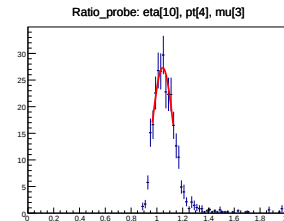
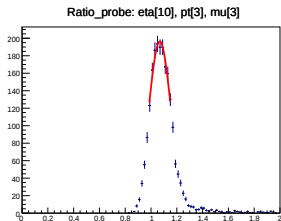
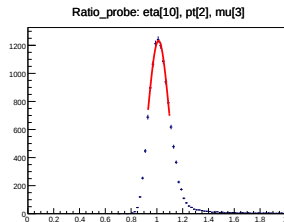
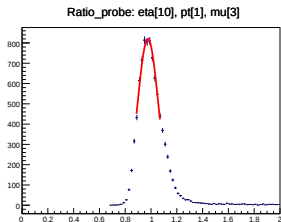
Plot η 10, μ 1



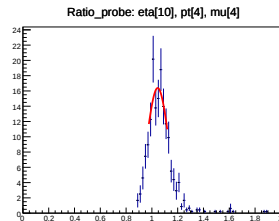
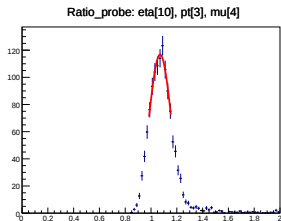
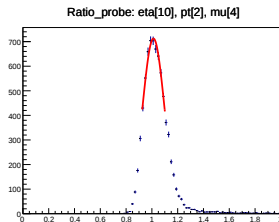
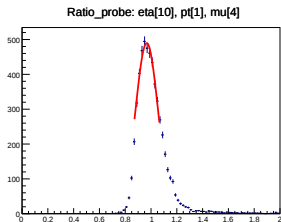
Plot η 10, μ 2



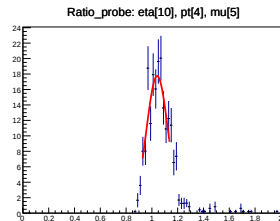
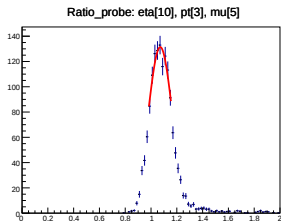
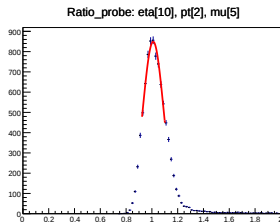
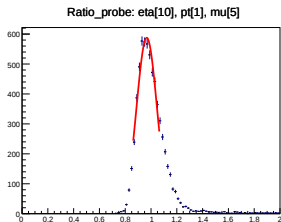
Plot η 10, μ 3



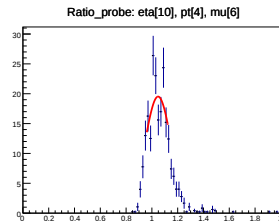
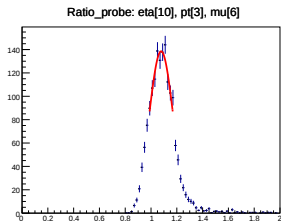
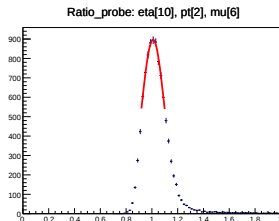
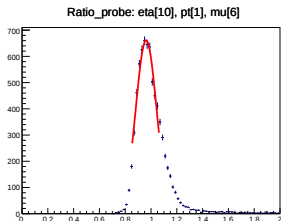
Plot η 10, μ 4



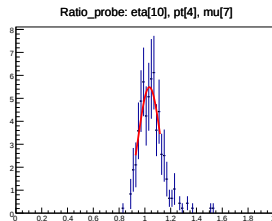
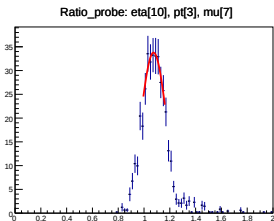
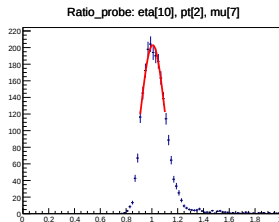
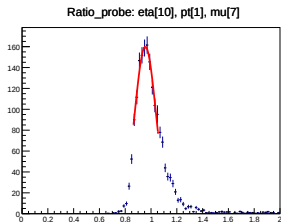
Plot η 10, μ 5



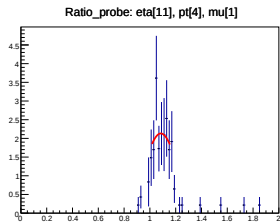
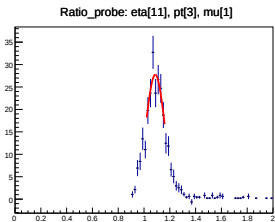
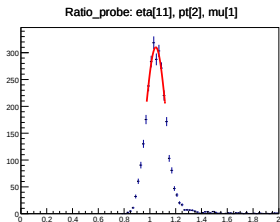
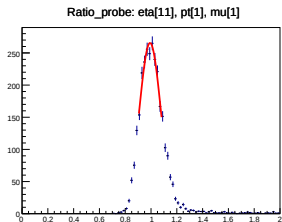
Plot η 10, μ 6



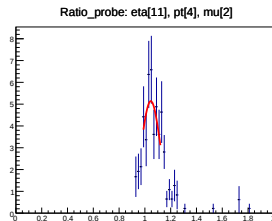
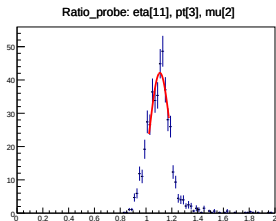
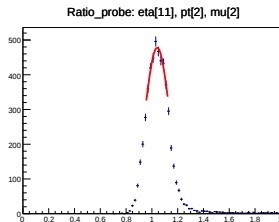
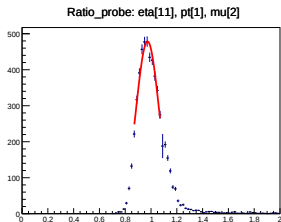
Plot η 10, μ 7



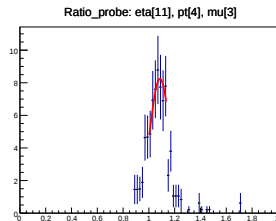
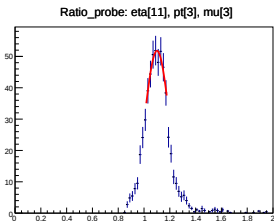
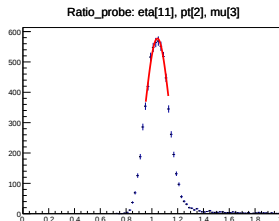
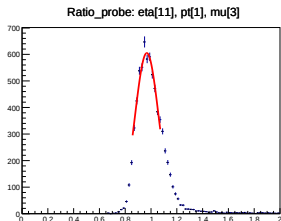
Plot η 11, μ 1



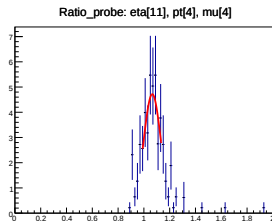
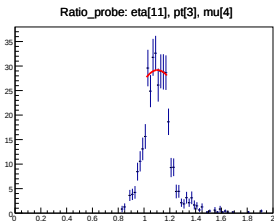
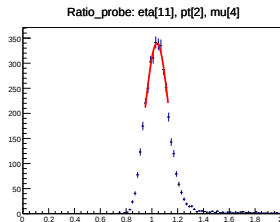
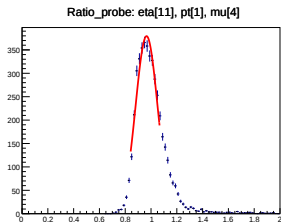
Plot η 11, μ 2



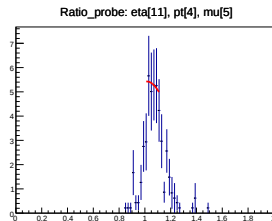
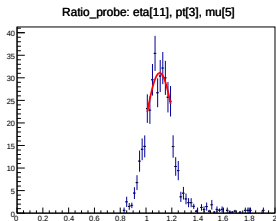
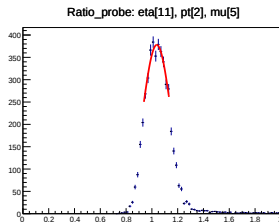
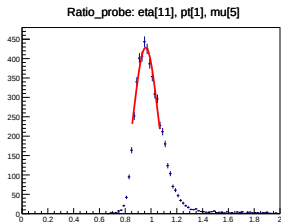
Plot η 11, μ 3



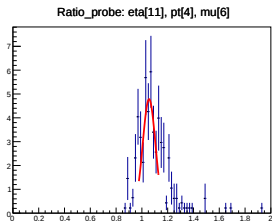
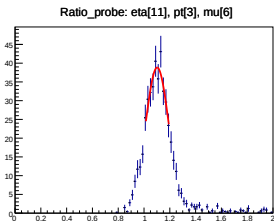
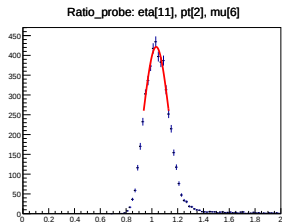
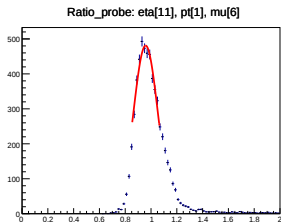
Plot η 11, μ 4



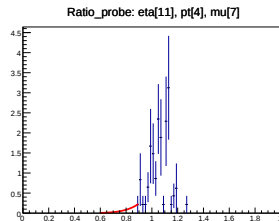
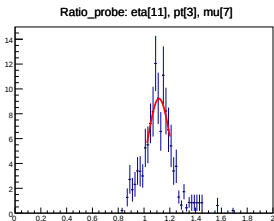
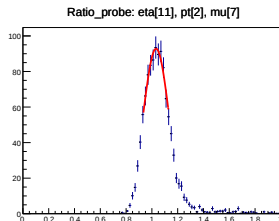
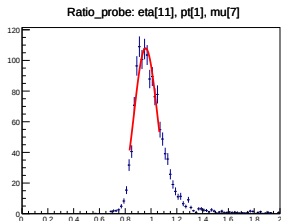
Plot η 11, μ 5



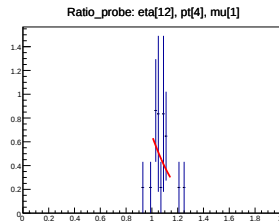
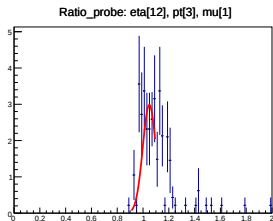
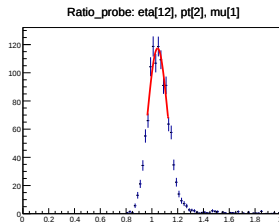
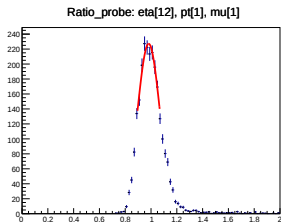
Plot η 11, μ 6



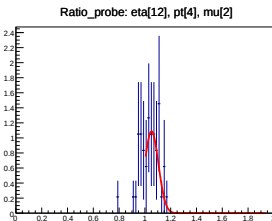
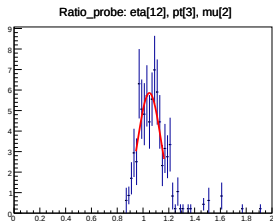
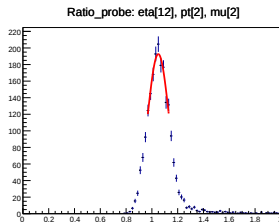
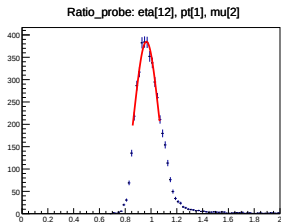
Plot η 11, μ 7



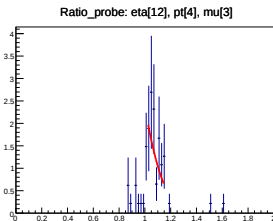
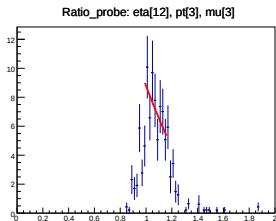
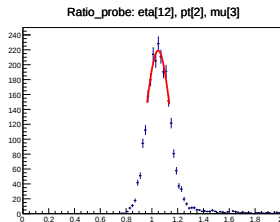
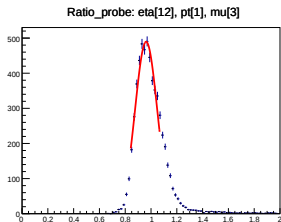
Plot η 12, μ 1



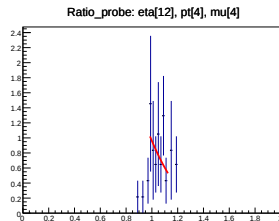
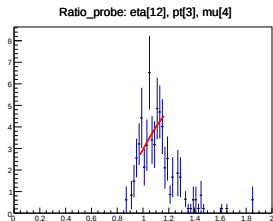
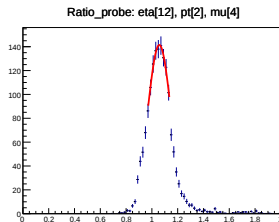
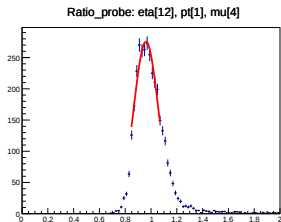
Plot η 12, μ 2



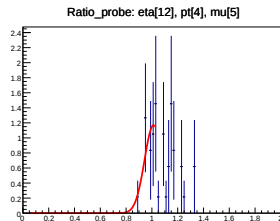
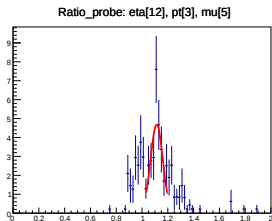
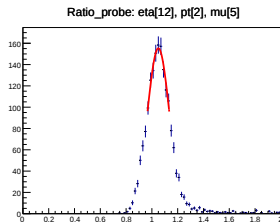
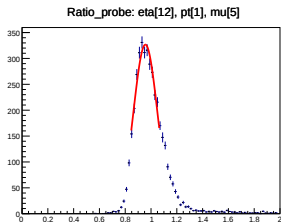
Plot η 12, μ 3



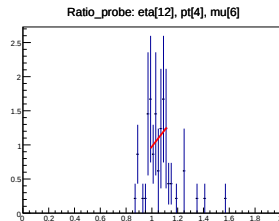
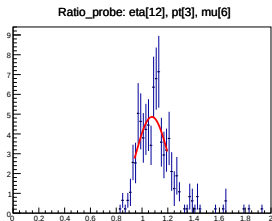
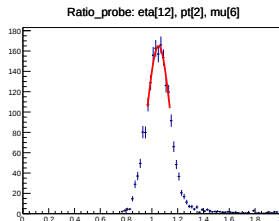
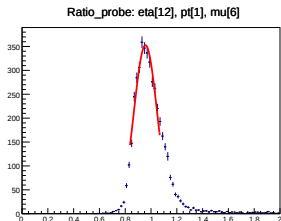
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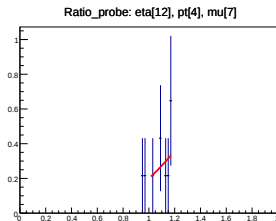
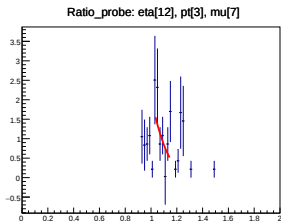
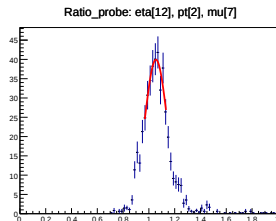
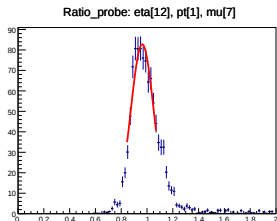
Plot η 12, μ 5



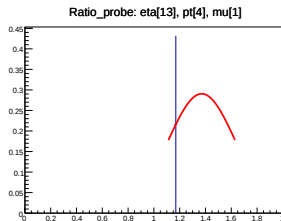
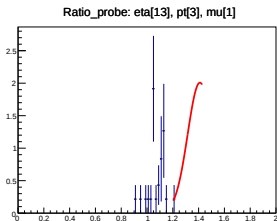
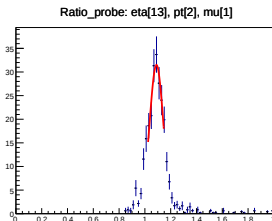
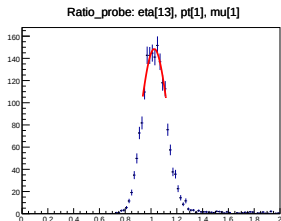
Plot η 12, μ 6



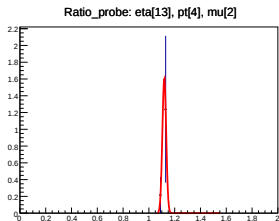
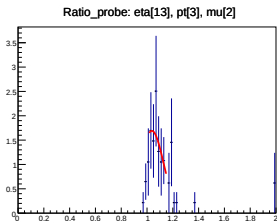
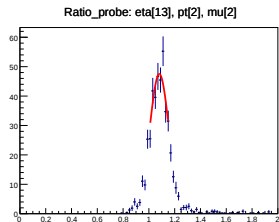
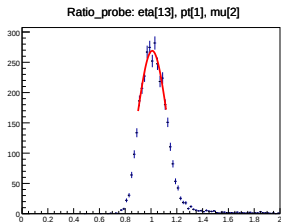
Plot η 12, μ 7



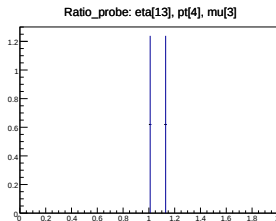
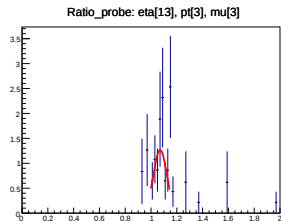
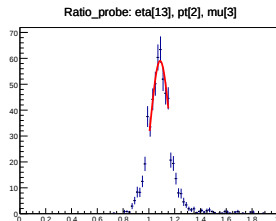
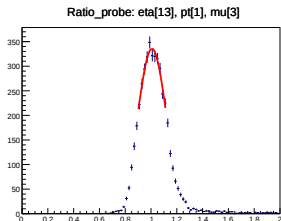
Plot η 13, μ 1



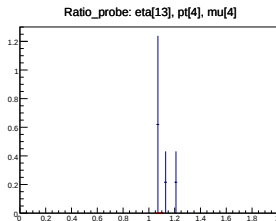
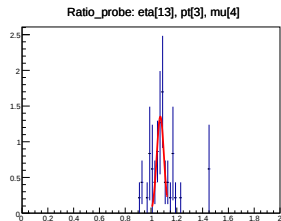
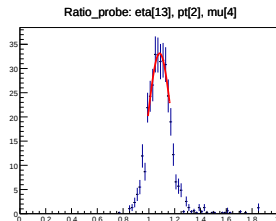
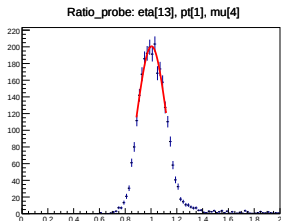
Plot η 13, μ 2



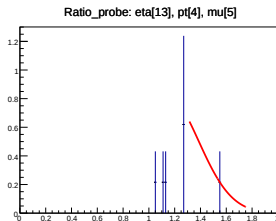
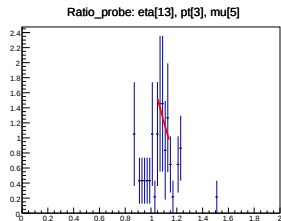
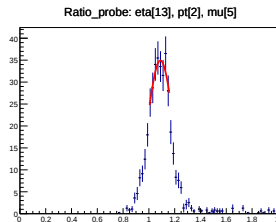
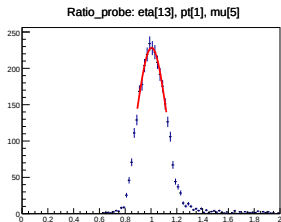
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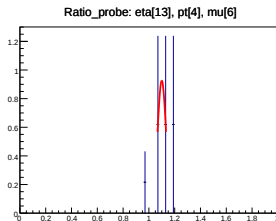
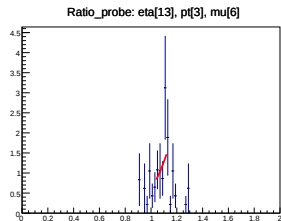
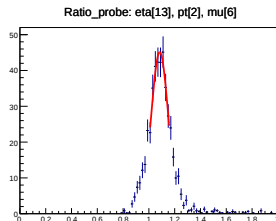
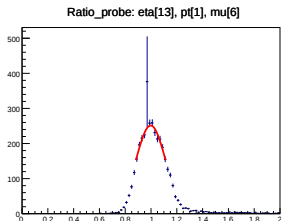
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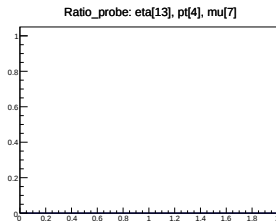
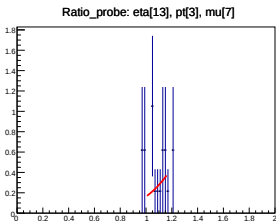
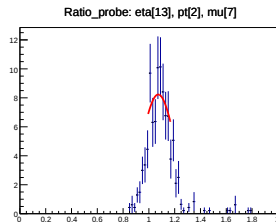
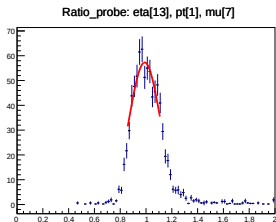
Plot η 13, μ 5



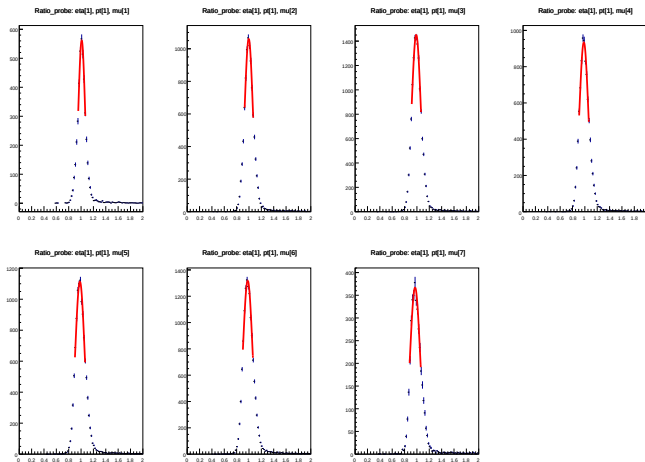
Plot η 13, μ 6



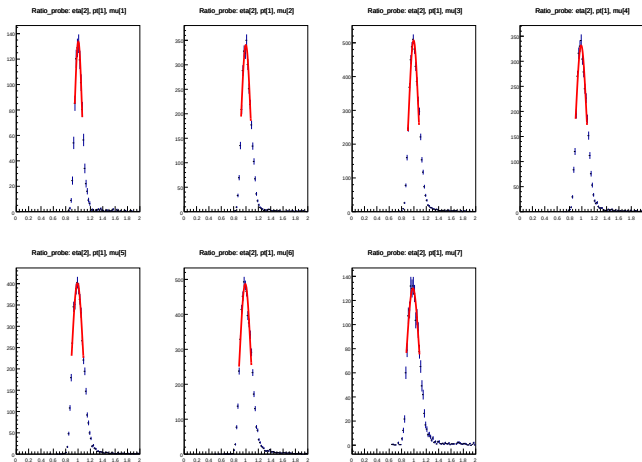
Plot η 13, μ 7



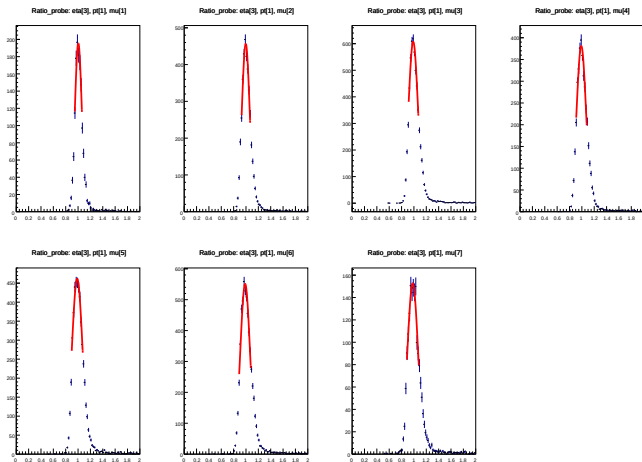
Plot p_t 1, η 1



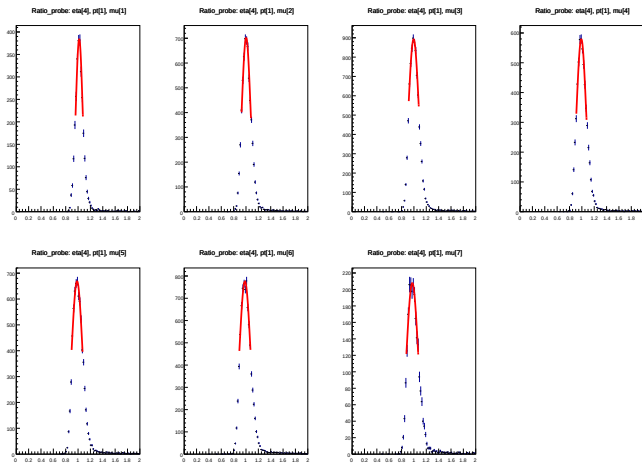
Plot p_t 1, η 2



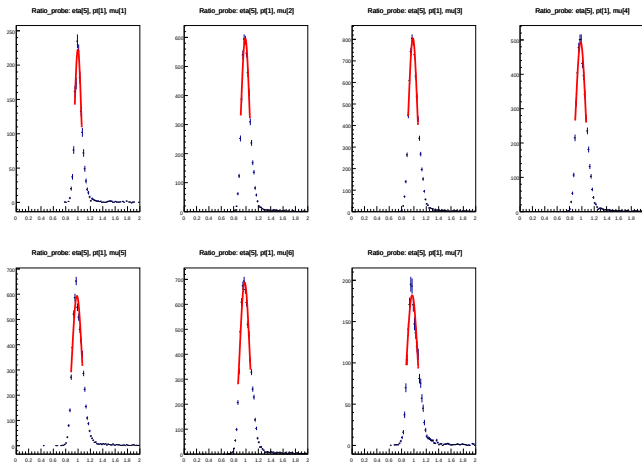
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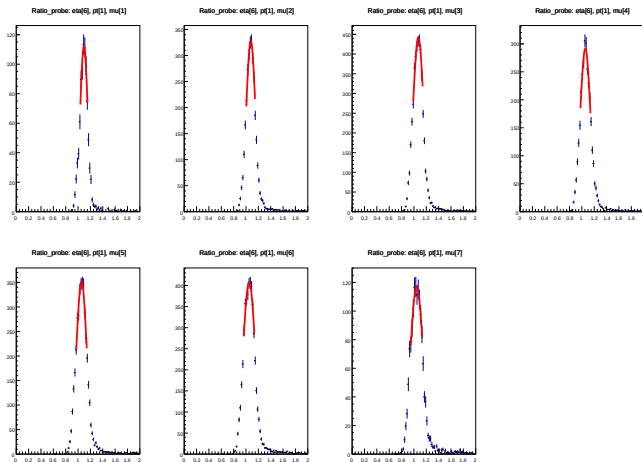
Plot p_t 1, η 4



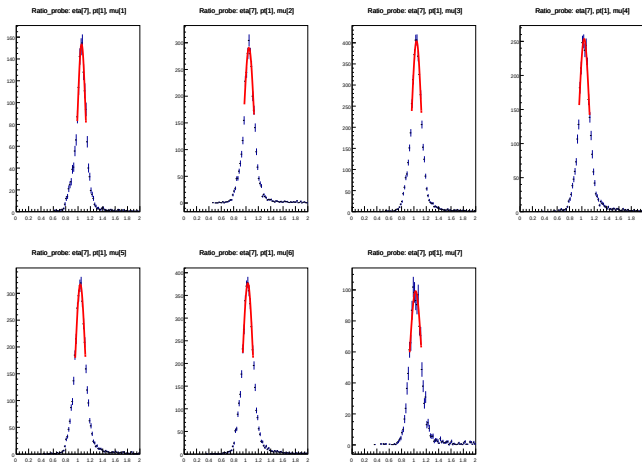
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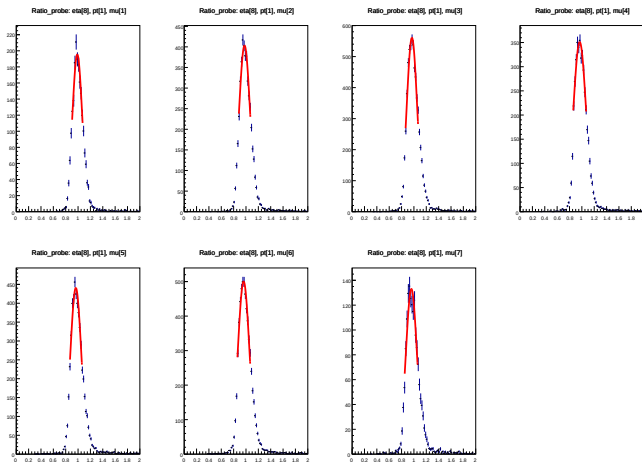
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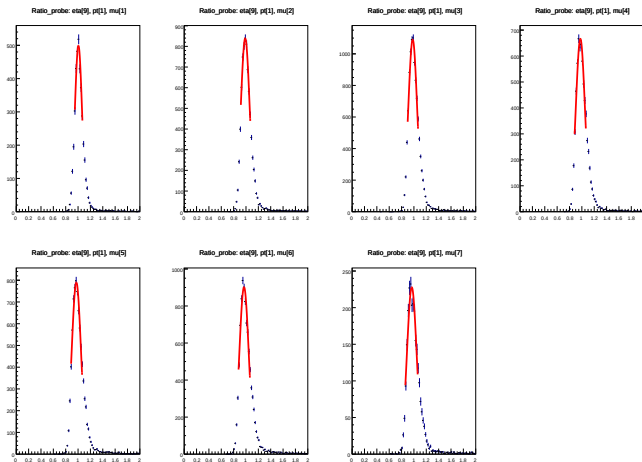
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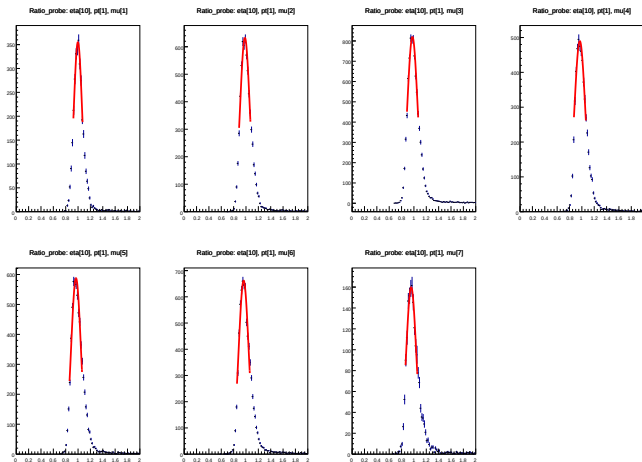
Plot p_t 1, η 8



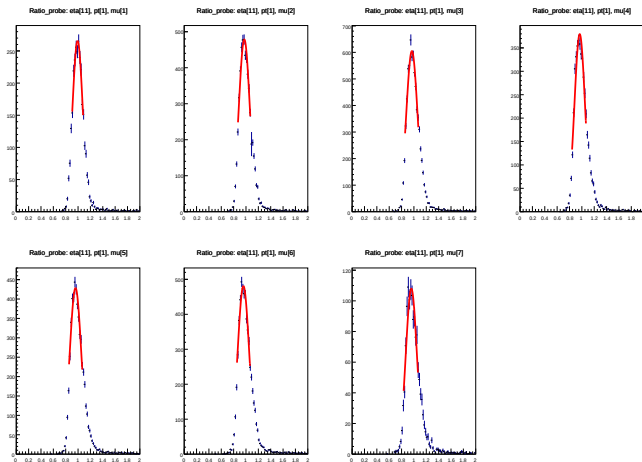
Plot p_t 1, η 9



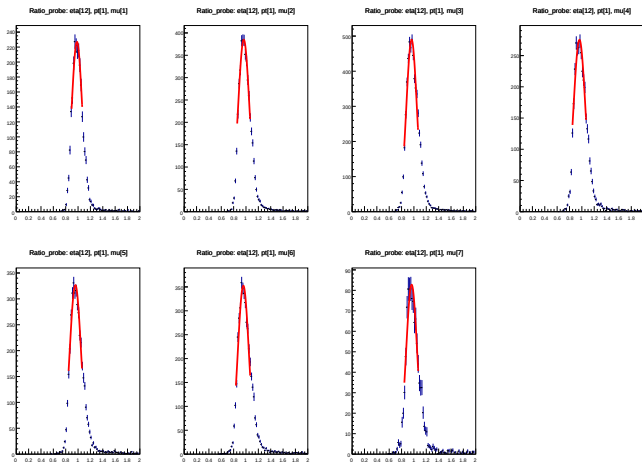
Plot p_t 1, η 10



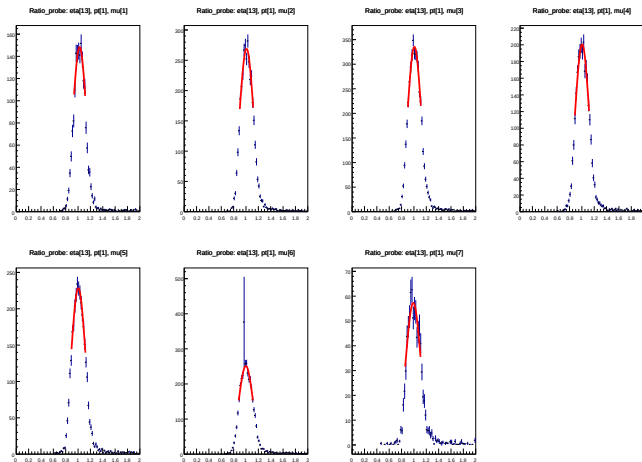
Plot p_t 1, η 11



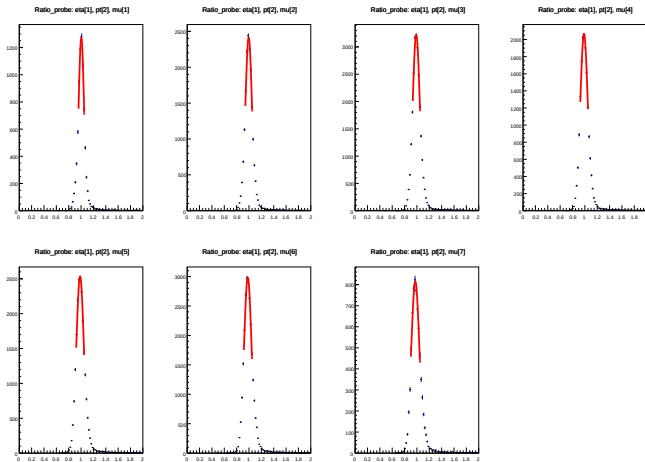
Plot p_t 1, η 12



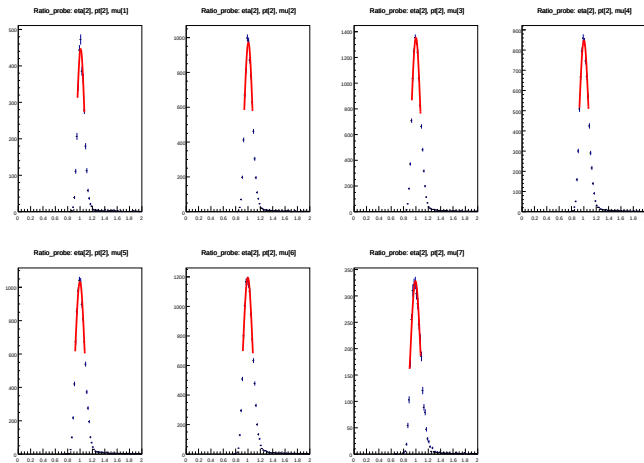
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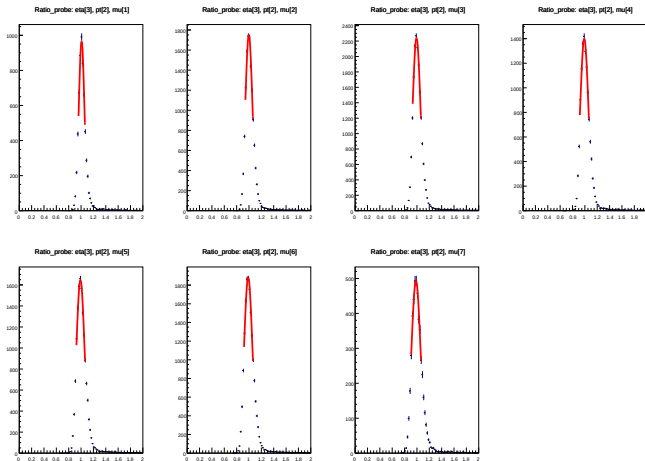
Plot p_t 2, η 1



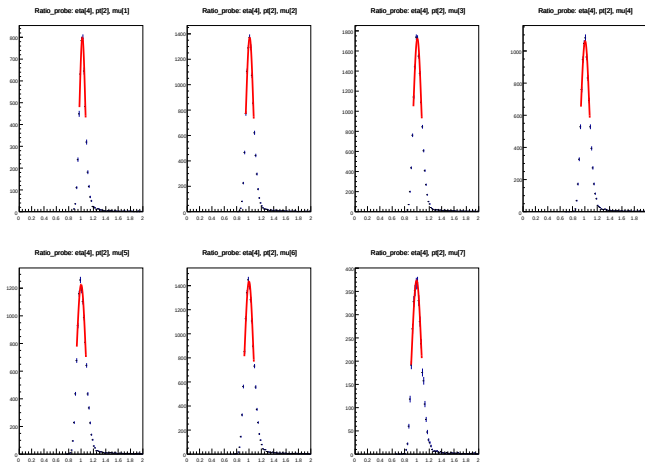
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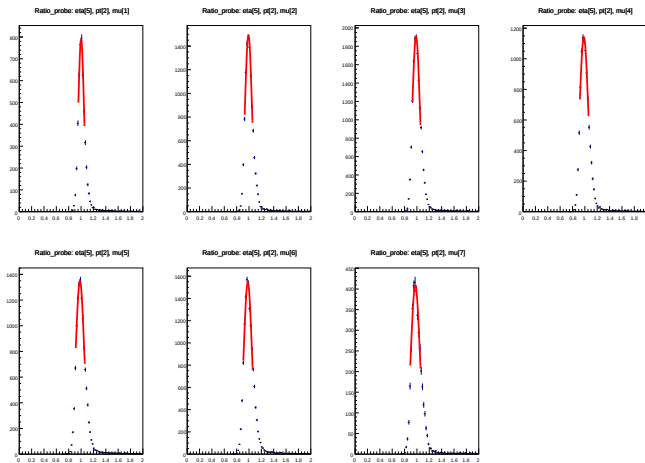
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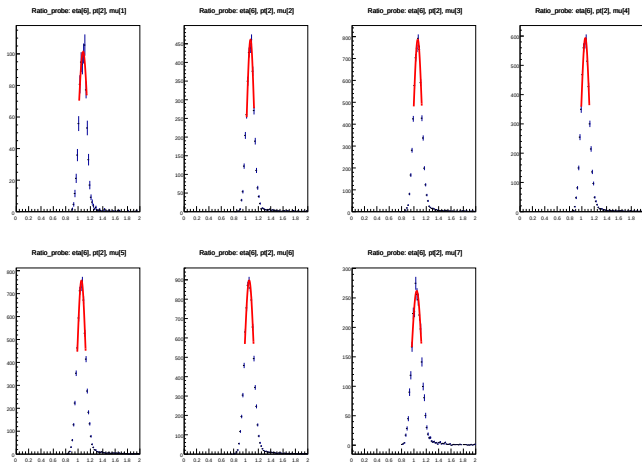
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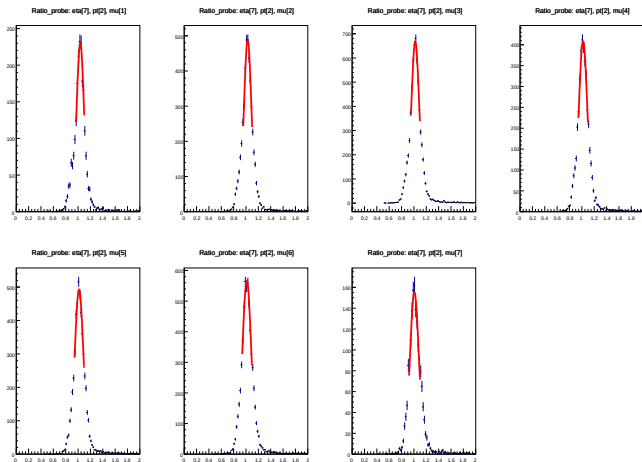
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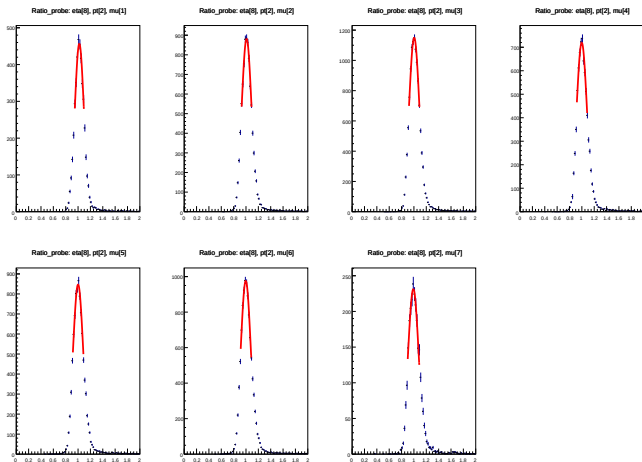
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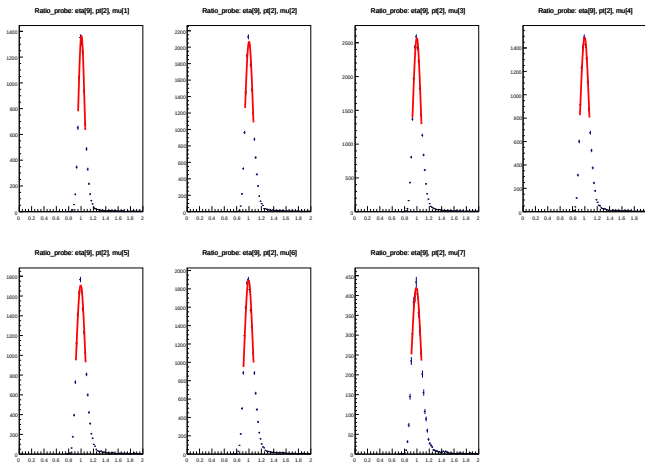
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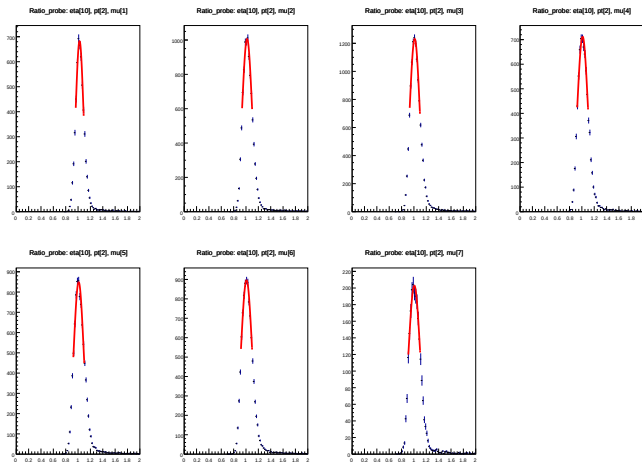
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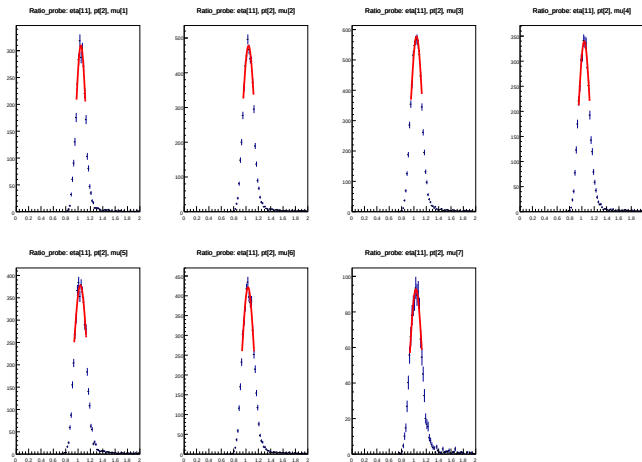
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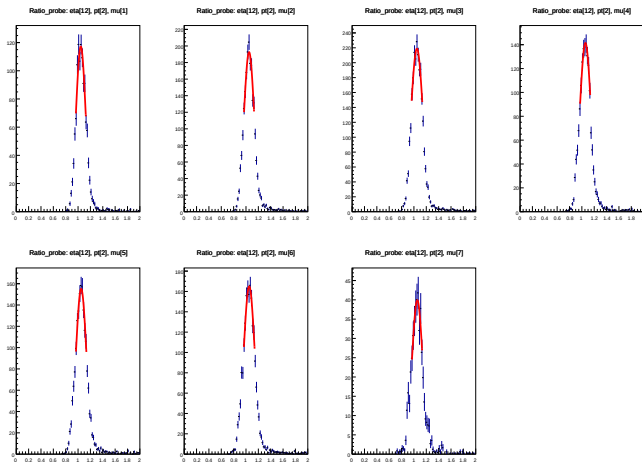
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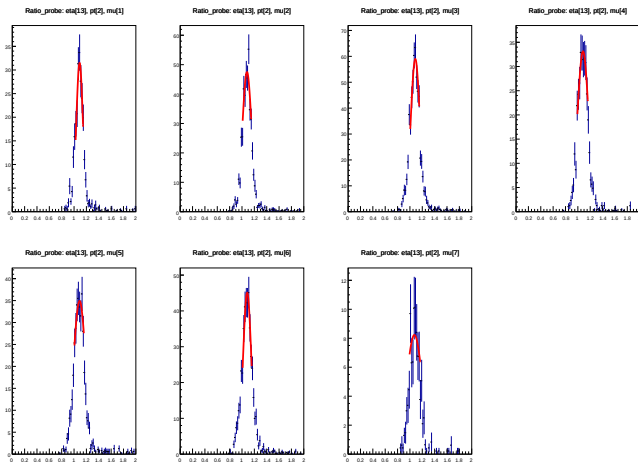
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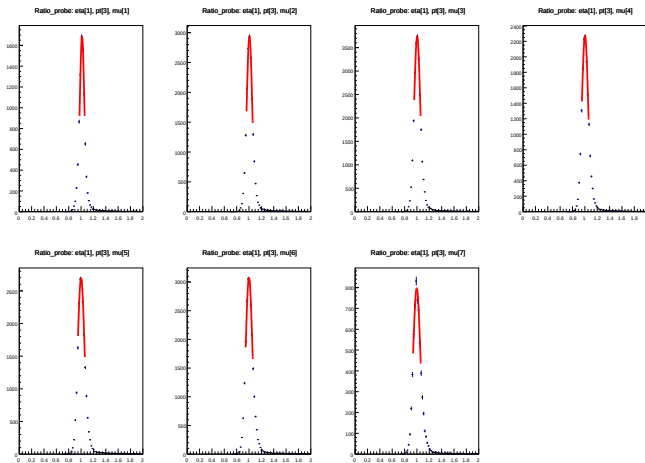
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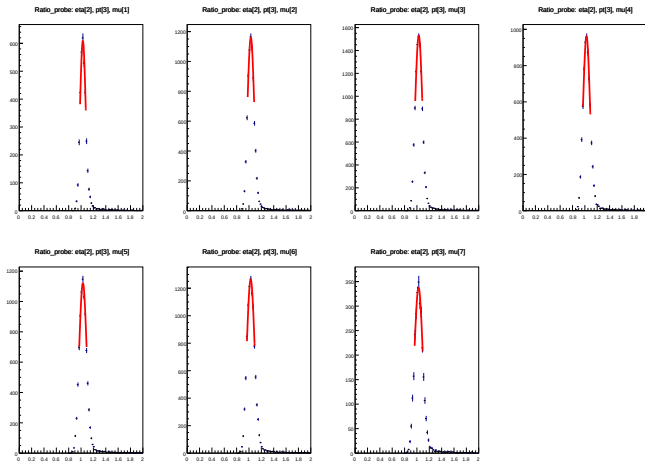
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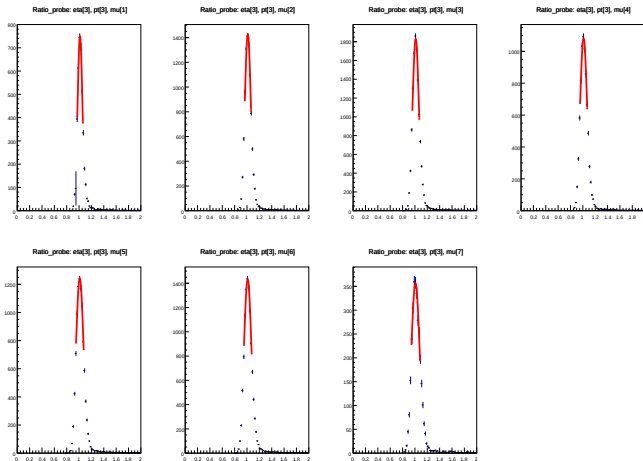
Plot p_t 3, η 1



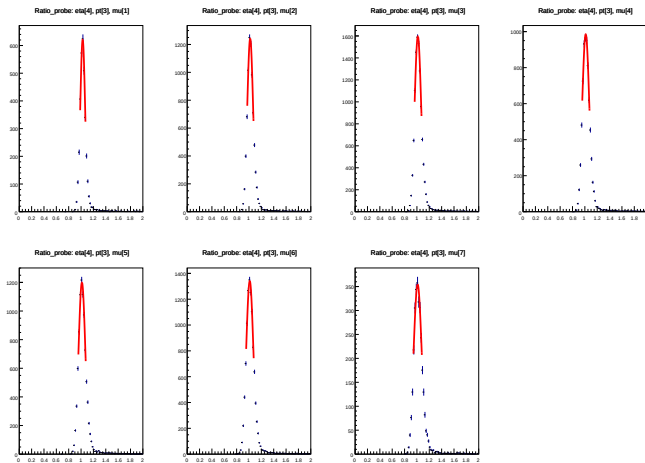
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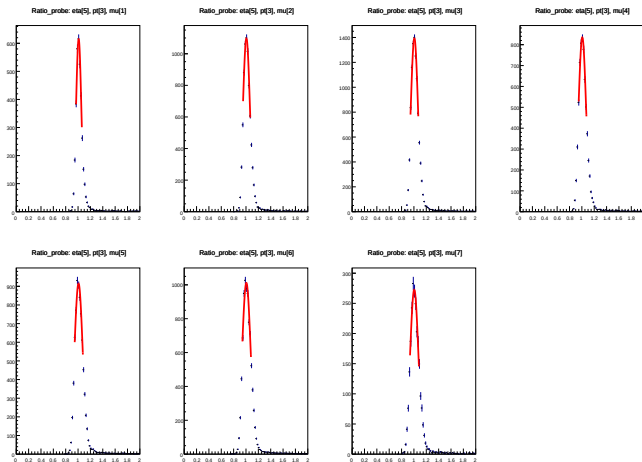
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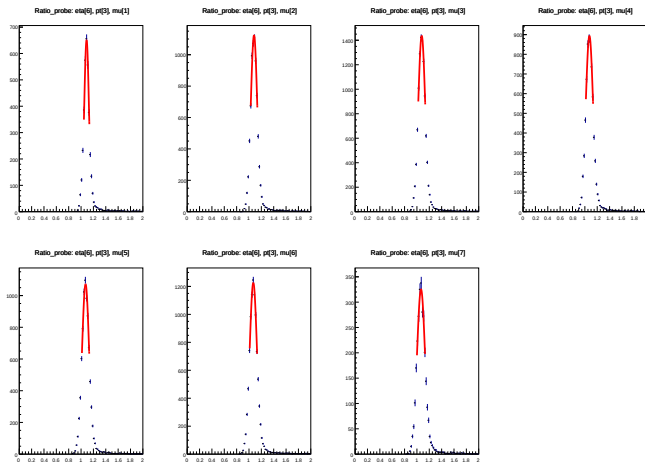
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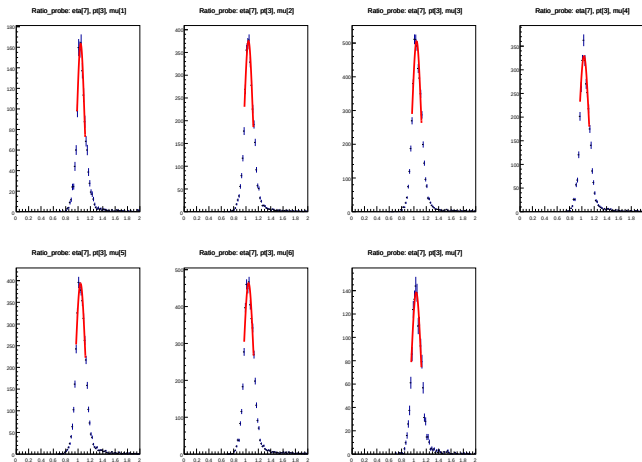
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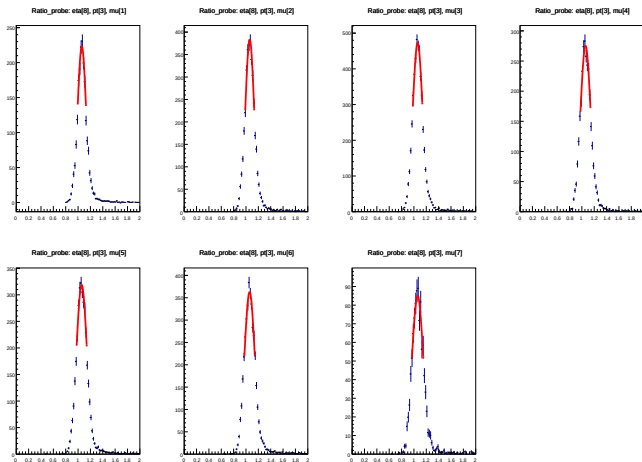
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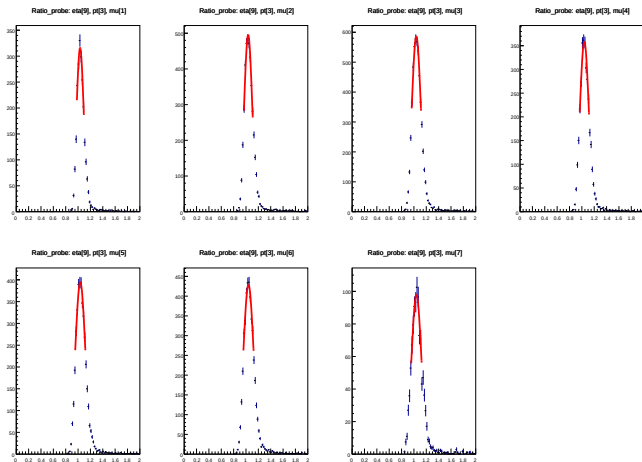
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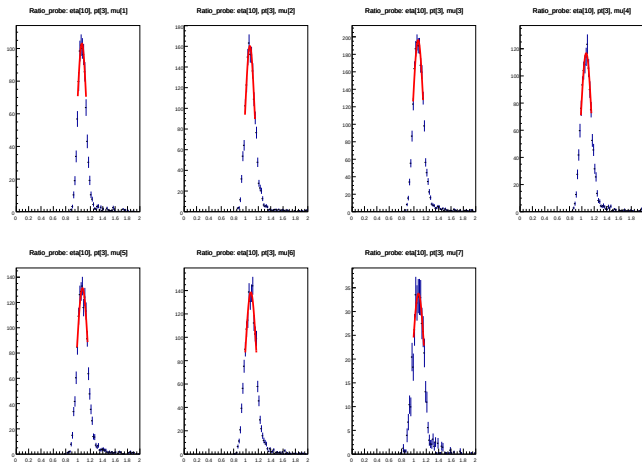
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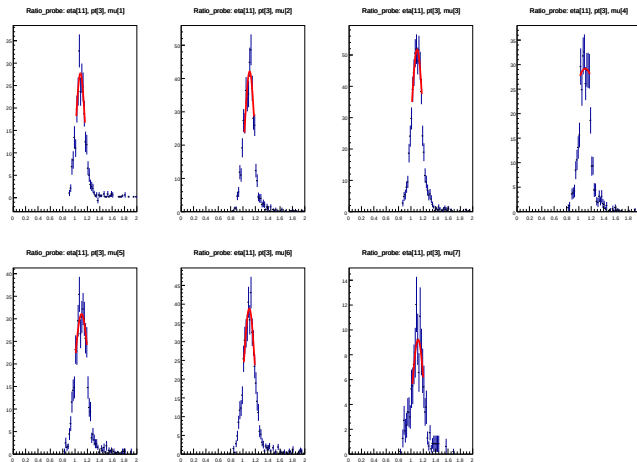
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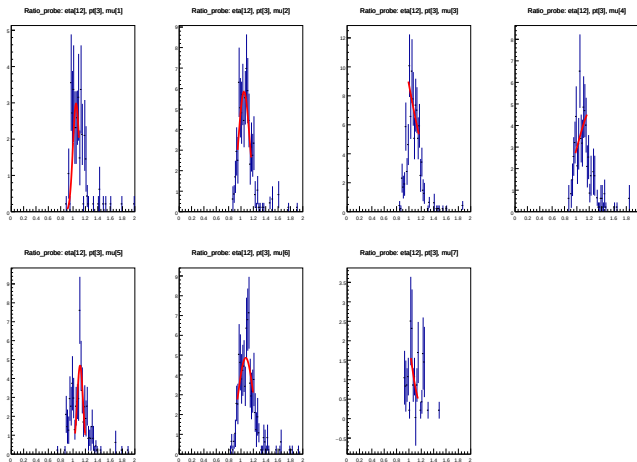
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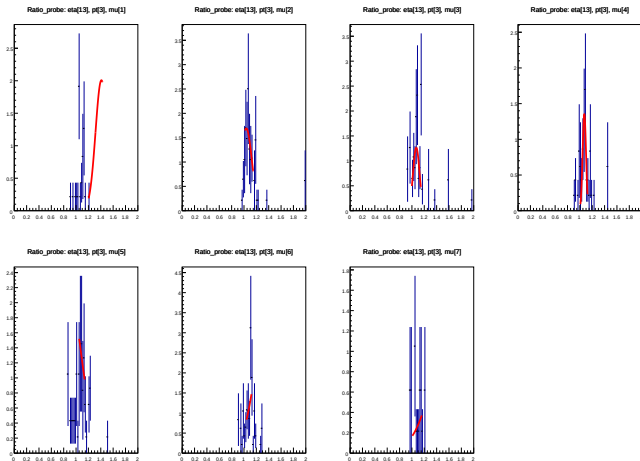
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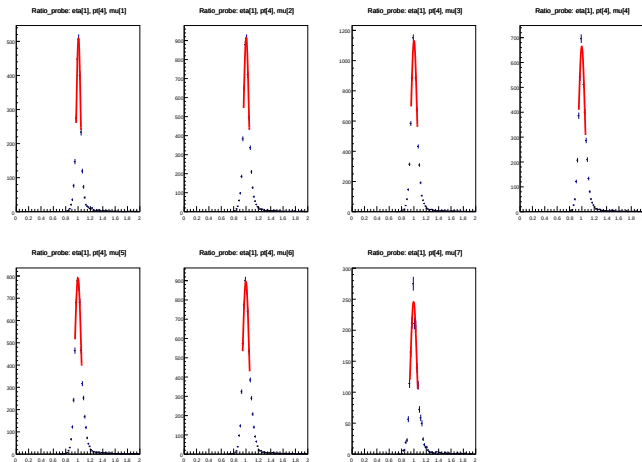
Plot p_t 3, η 12



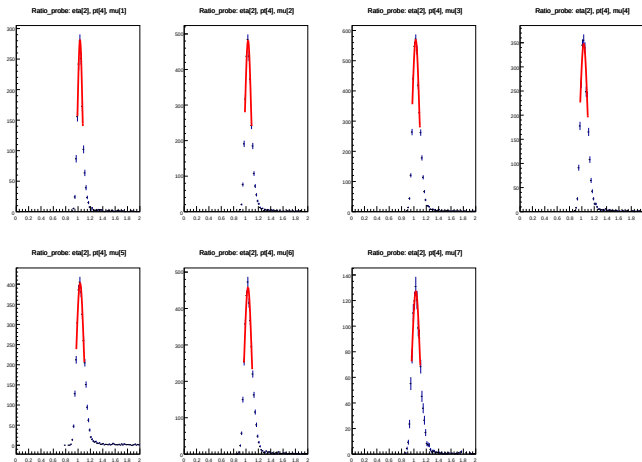
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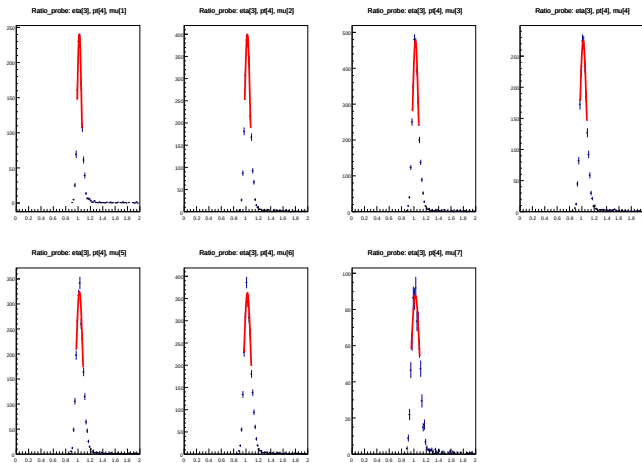
Plot p_t 4, η 1



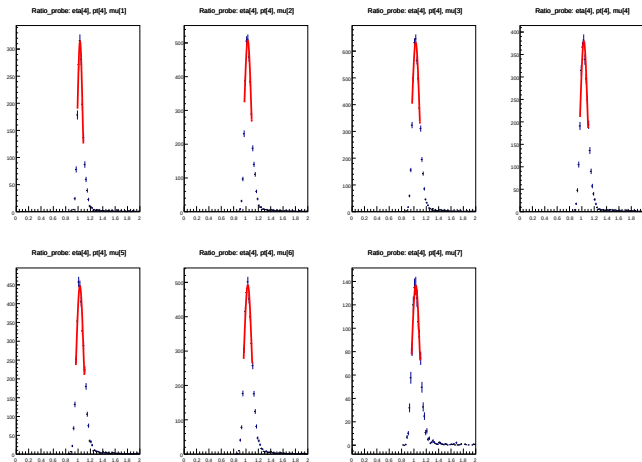
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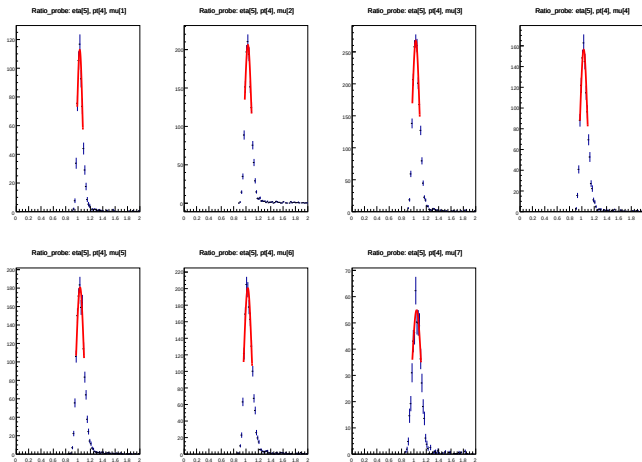
Plot p_t 4, η 3



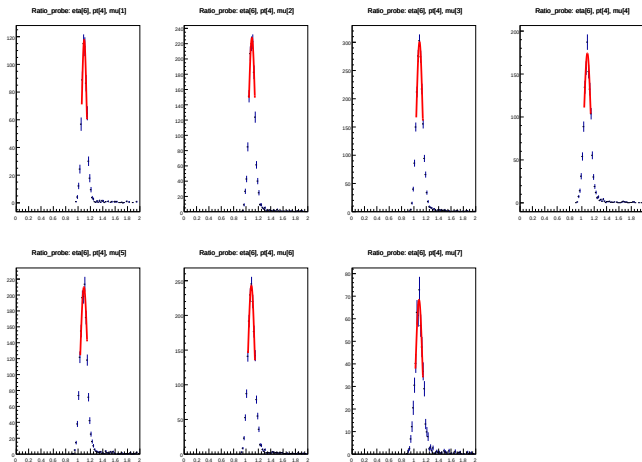
Plot p_t 4, η 4



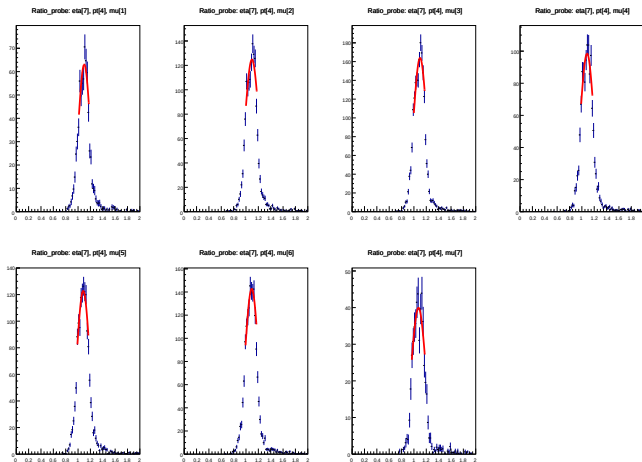
Plot p_t 4, η 5



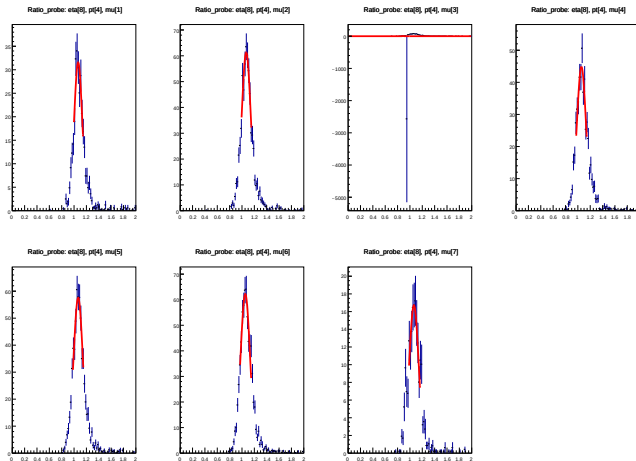
Plot p_t 4, η 6



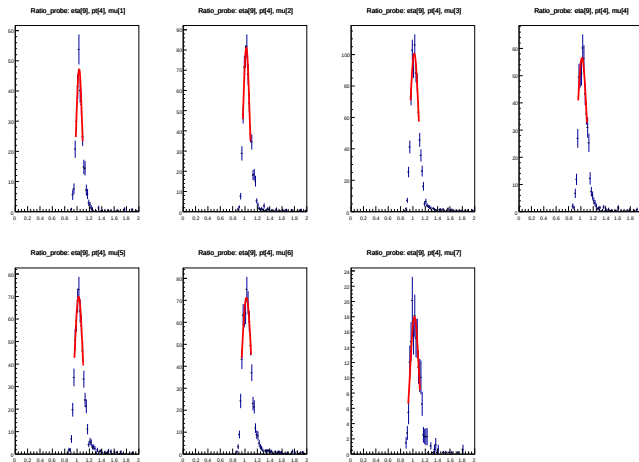
Plot p_t 4, η 7



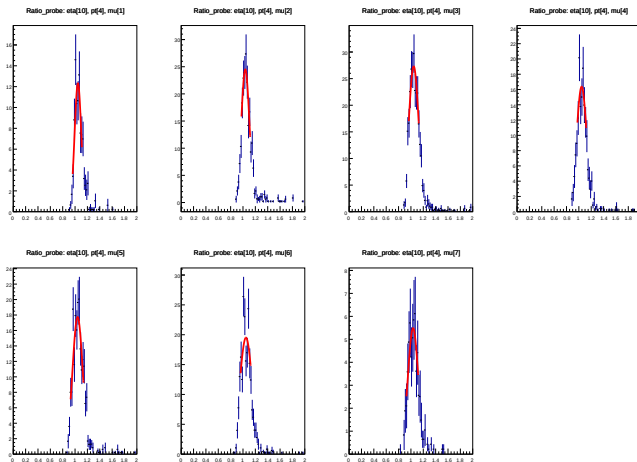
Plot p_t 4, η 8



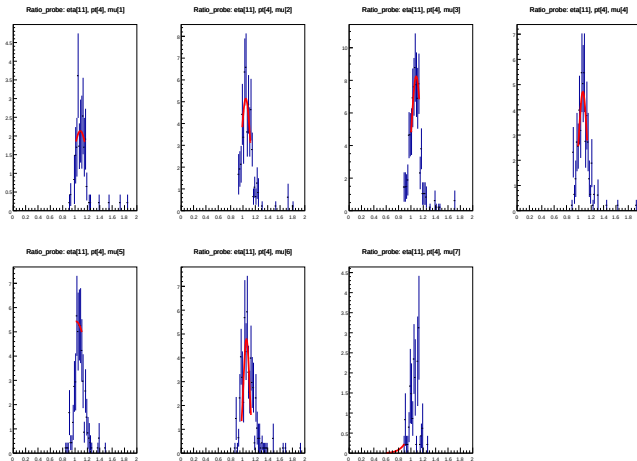
Plot p_t 4, η 9



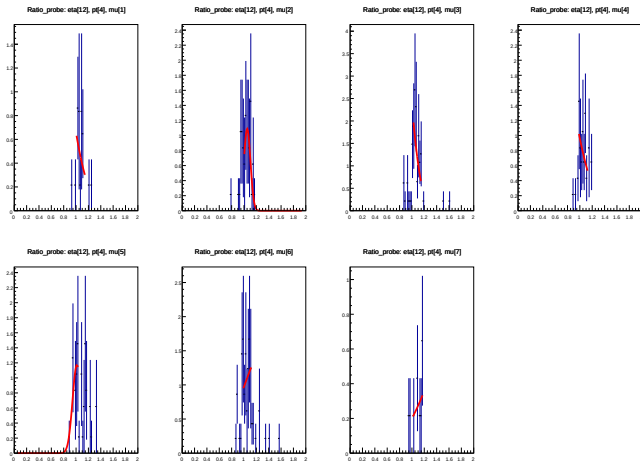
Plot p_t 4, η 10



Plot p_t 4, η 11



Plot p_t 4, η 12



Plot p_t 4, η 13

