Fit two peaks for p and He^3

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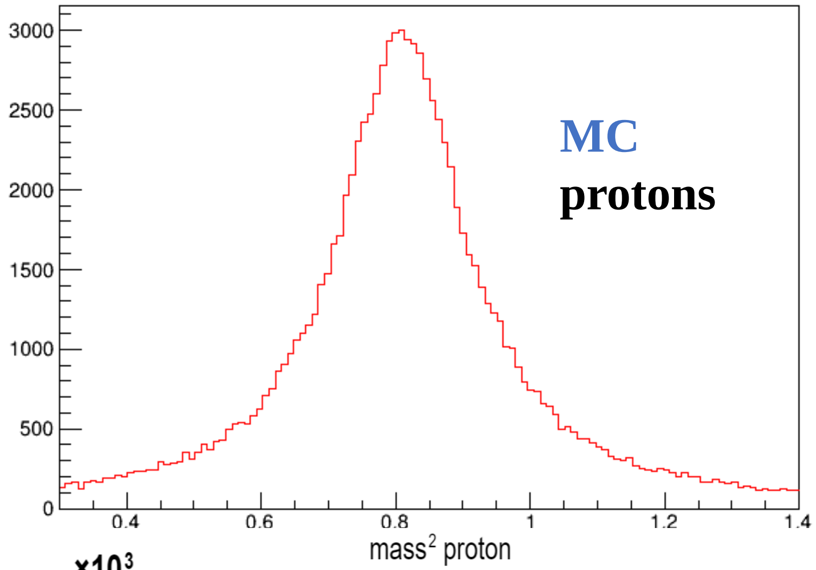
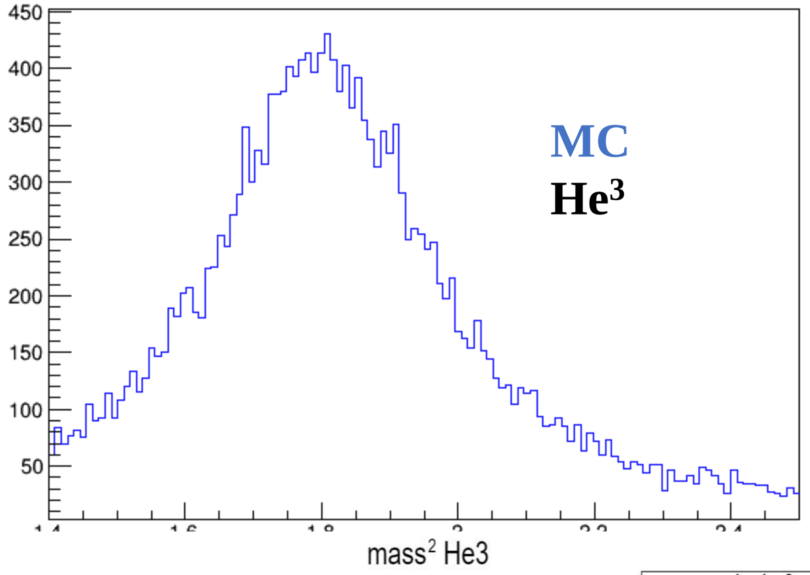
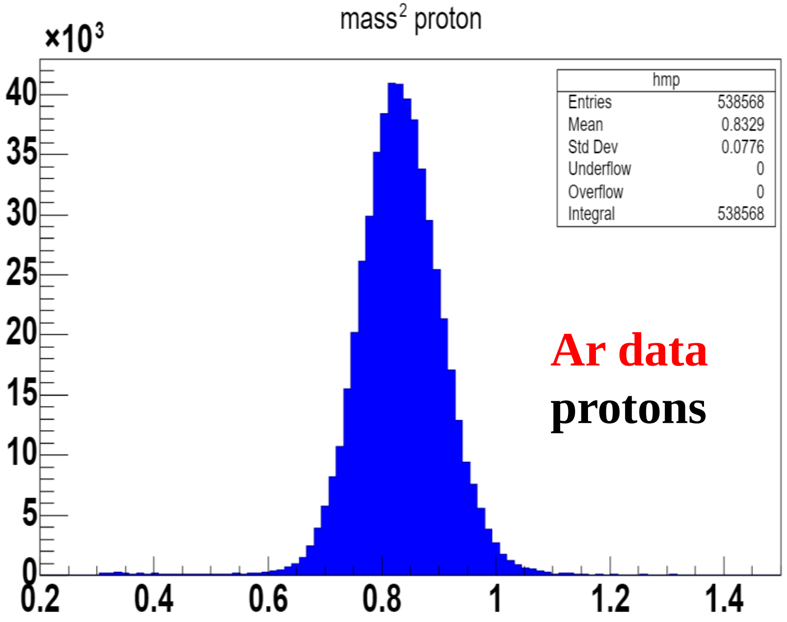
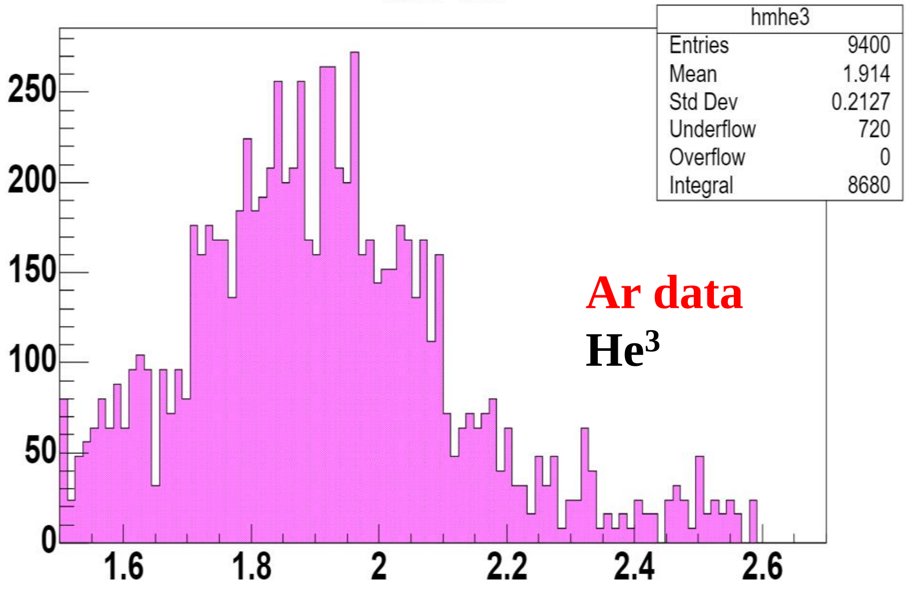
Check MC – script for protons and He^3





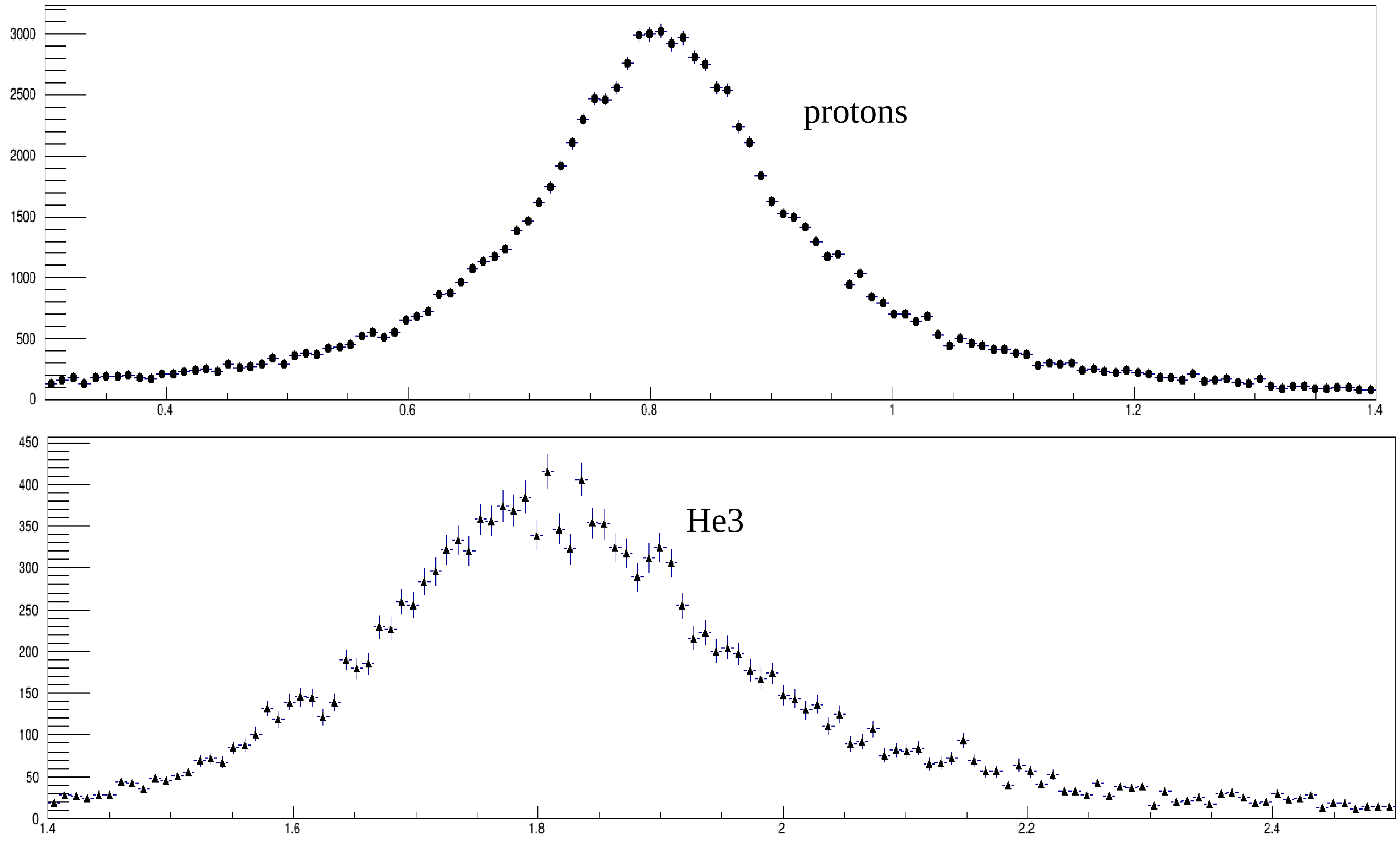


m^2/q^2, GeV^2



m^2/q^2, GeV^2

m^2(p,He3)distribution weighted

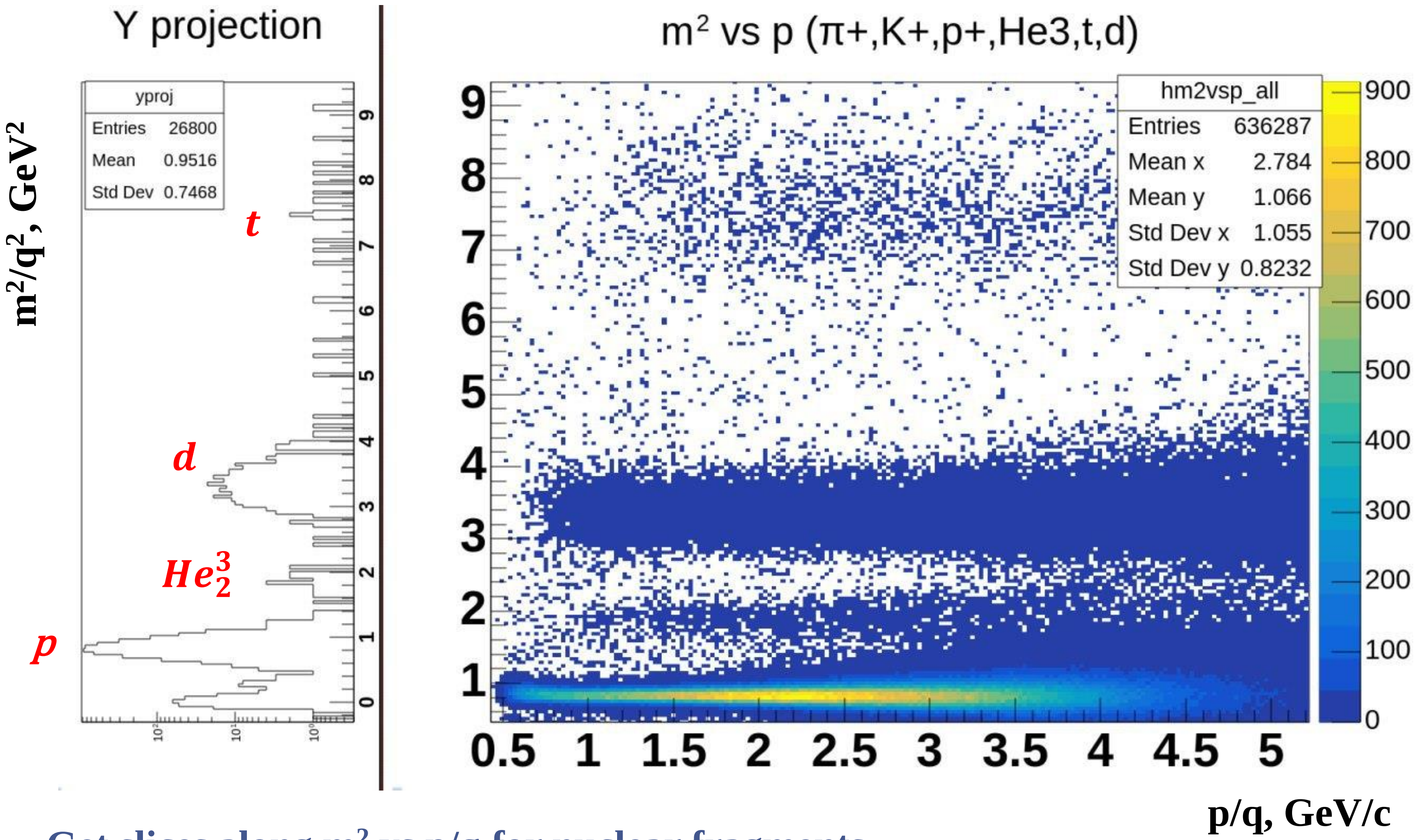


From fit Ar data:

Mean m^2p =0.81;
$\sigma_p(m^2)$=0.08;
Mean $m^2(He^3)$ =1.81;
$\sigma_{He3}(m^2)$=0.13

m^2/q^2, GeV^2

Distribution of the $m^2$of the p/q for nuclear fragments



- Get slices along m^2 vs p/q for nuclear fragments
- Fit each slice using ModGauss(1st peak) + ModGauss(2nd peak)+ expo(background) function
- Get Mean & Sigma from the fit
- Make plots: dependencies Mean (m^2) vs p/q, $\sigma(m^2)$ vs p/q, Mean (m^2) $\pm 2\sigma(m^2)$
- Get information about identification fragments

Fit formula – ModGauss(1,2)

$$\alpha = \frac{m^2_{mean} - \mu_0}{\sigma_{m^2}}; c = 1 + \sqrt{\beta^2_{(3)} + \gamma^2_{(4)}} + \gamma_{(4)} th\alpha;$$

$$v = 1 + 0.5 \cdot \alpha^2 / c = 1 + 0.5 \cdot [\frac{m^2_{mean} - \mu_0}{\sigma_{m^2}}]^2 \Big/ 1 + \sqrt{\beta^2_{(3)} + \gamma^2_{(4)}} + \gamma_{(4)} th[\frac{m^2_{mean} - \mu_0}{\sigma_{m^2}}];$$

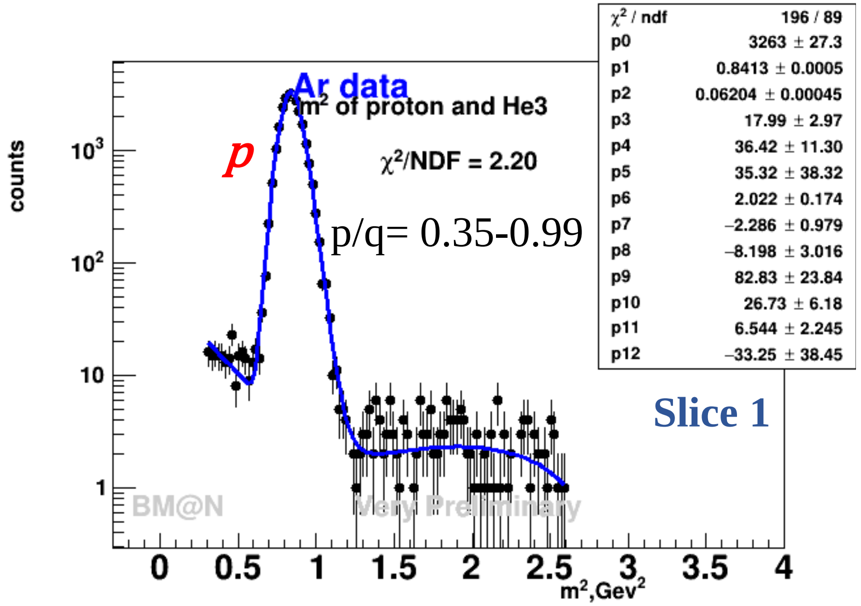
$$f(m^2(p)) = par_0 \cdot e^{vp};$$

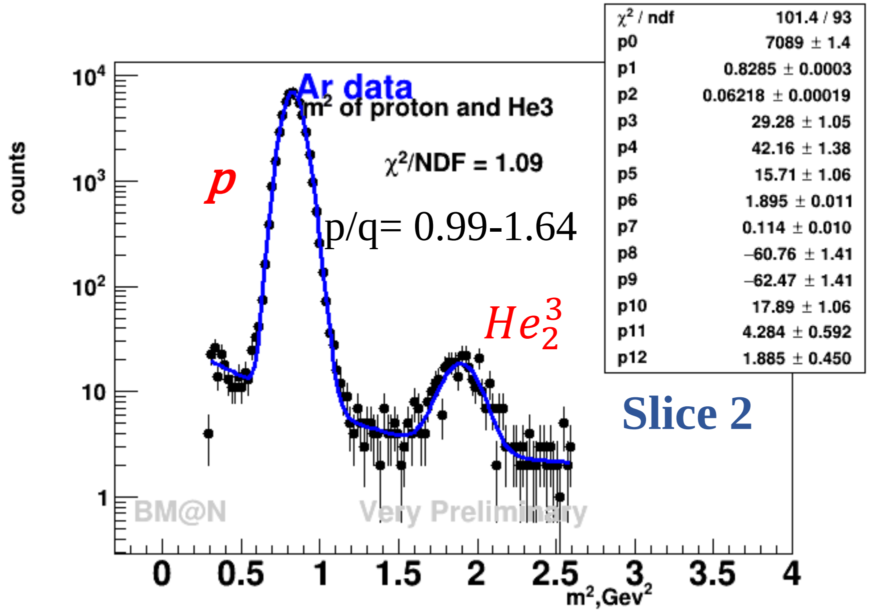
$$f(m^2(He3)) = par_5 \cdot e^{vHe3};$$

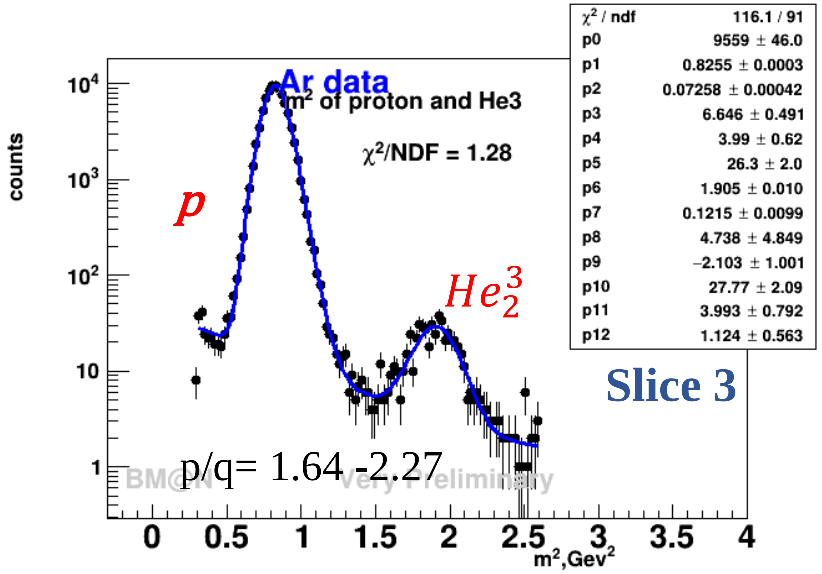
$$f_{bg} = par_{10} \cdot e^{[B_{11} \cdot (m^2 - 0.3/2.6 + 0.3)]} + A_{11};$$

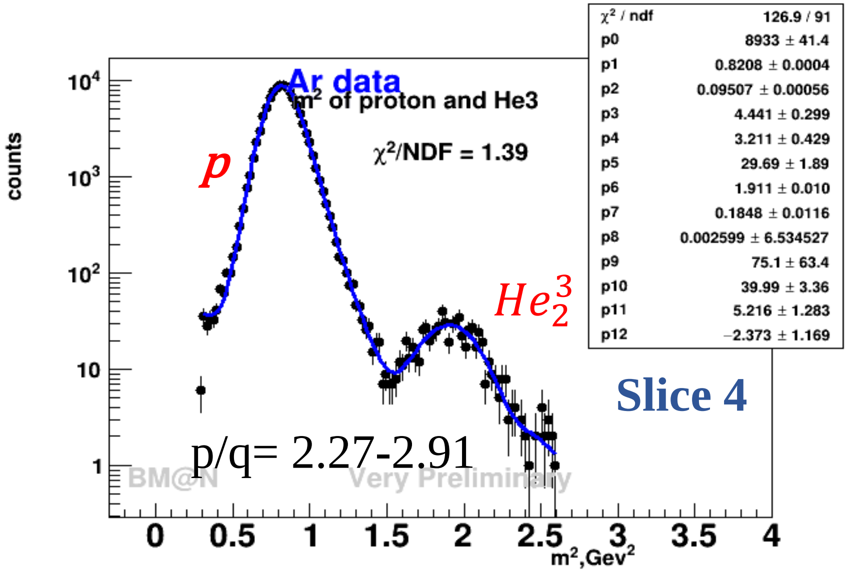
Fit Parameters	**protons**	**He3**
Par_0	13000	42.96
σ(m^2)	0.08	0.13
Mean (m^2)	0.81	1.81

Slice (m^2 vs p/q) fit ModGauss(**1st peak**) +ModGauss(**2nd peak**)+ expo(**background**)

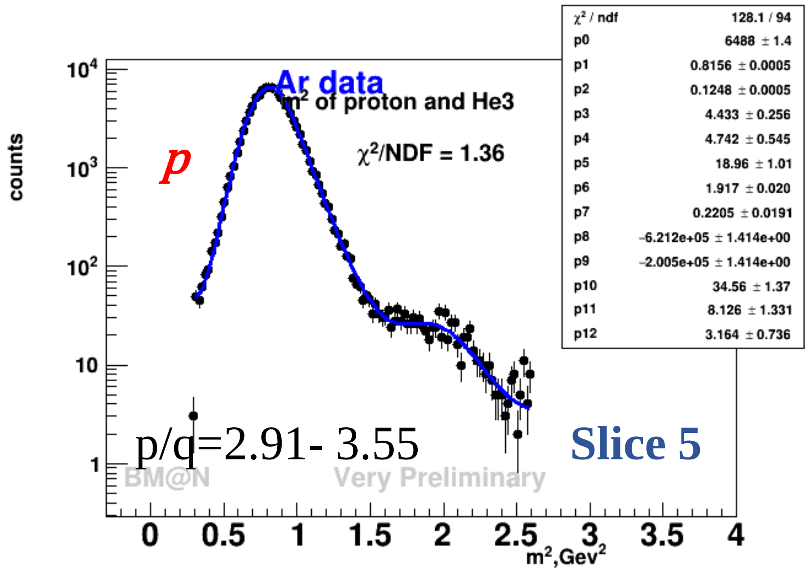


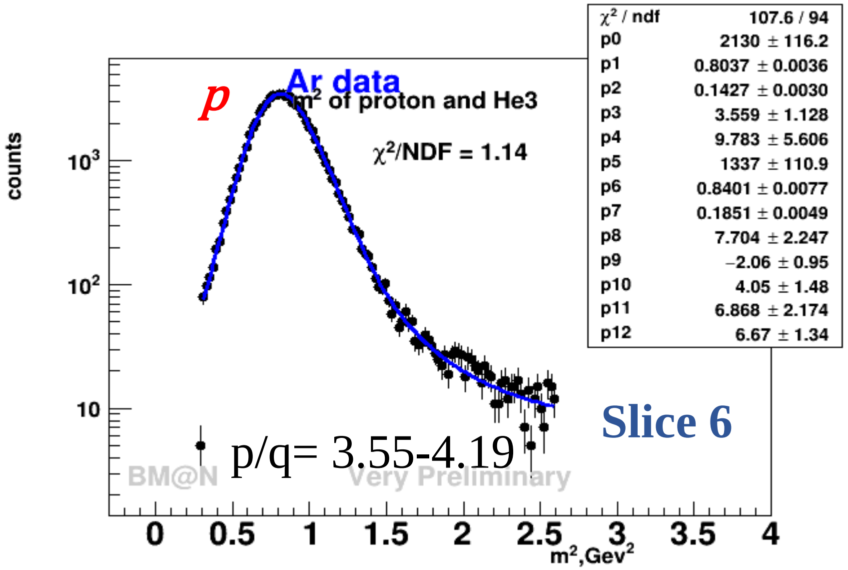


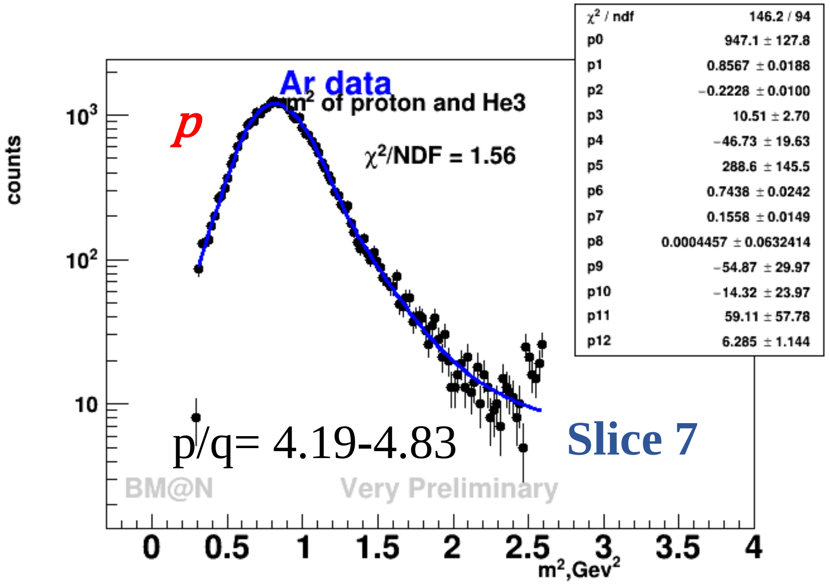


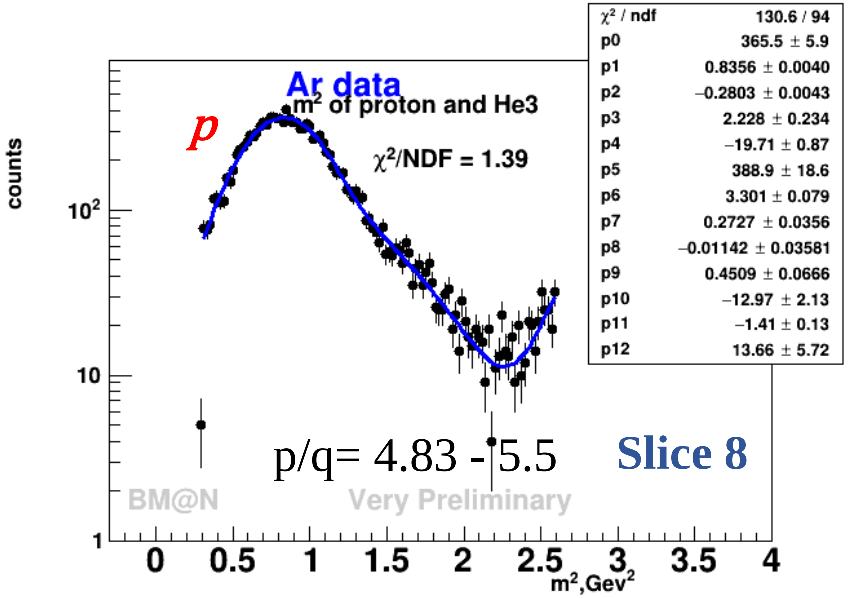


Slice (m^2 vs p/q) fit ModGauss(1st peak) +ModGauss(2nd peak)+ expo(background)

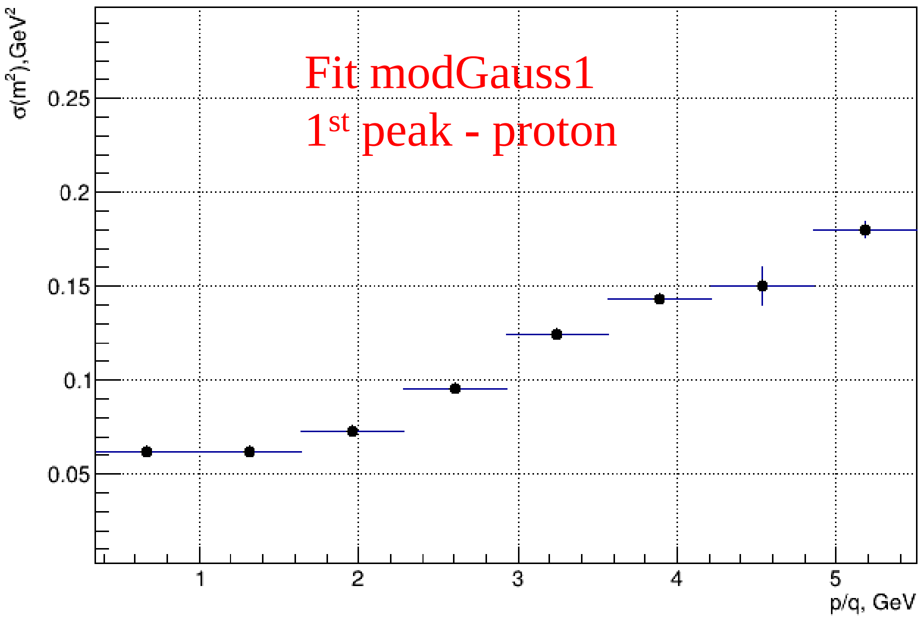




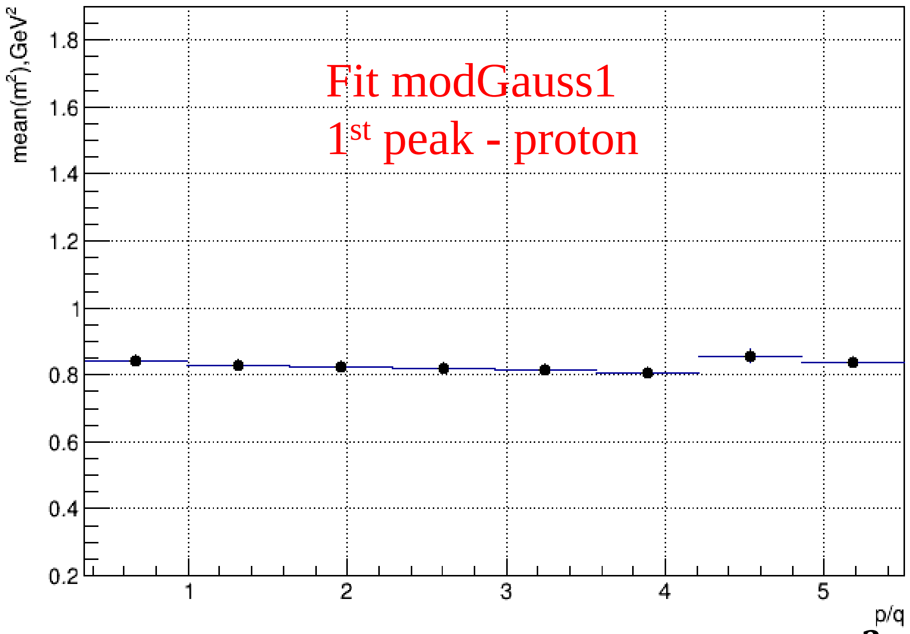




Distribution σ(m^2) of p/q for proton

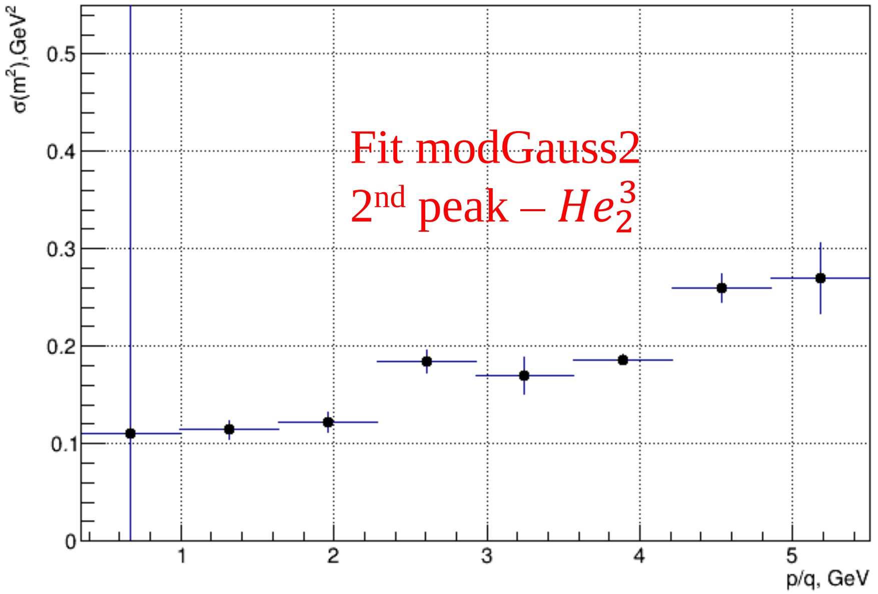


Distribution mean (m^2) of p/q for proton

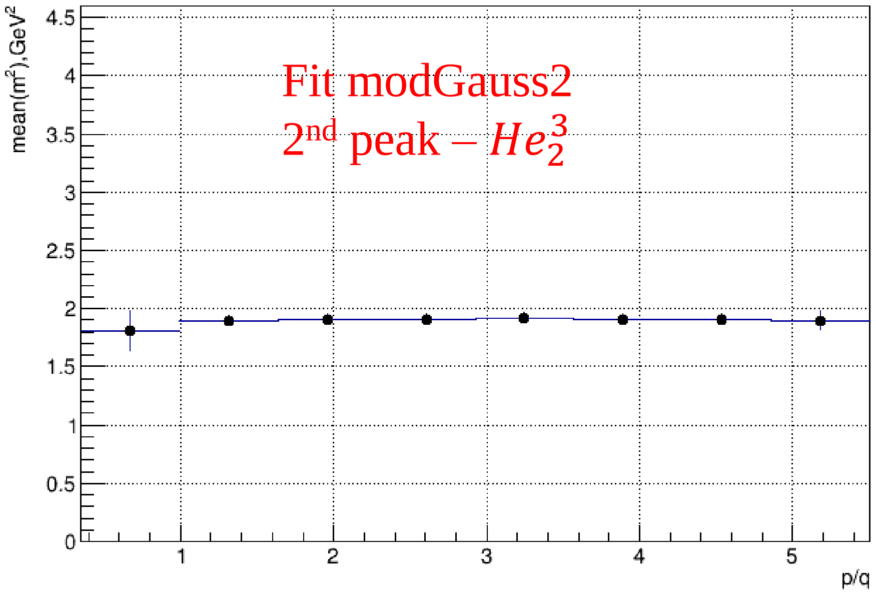


Fix sigma and mean

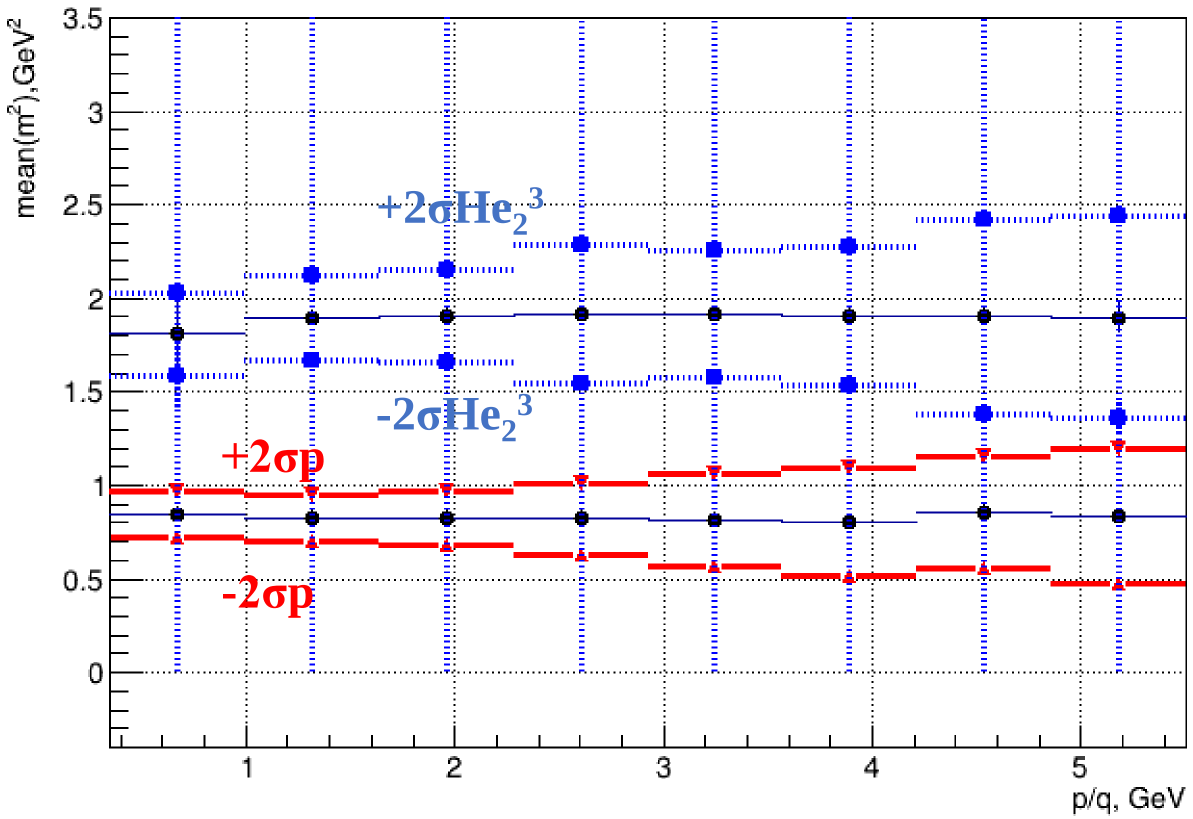
Distribution σ(m^2) of p/q for He_2^3

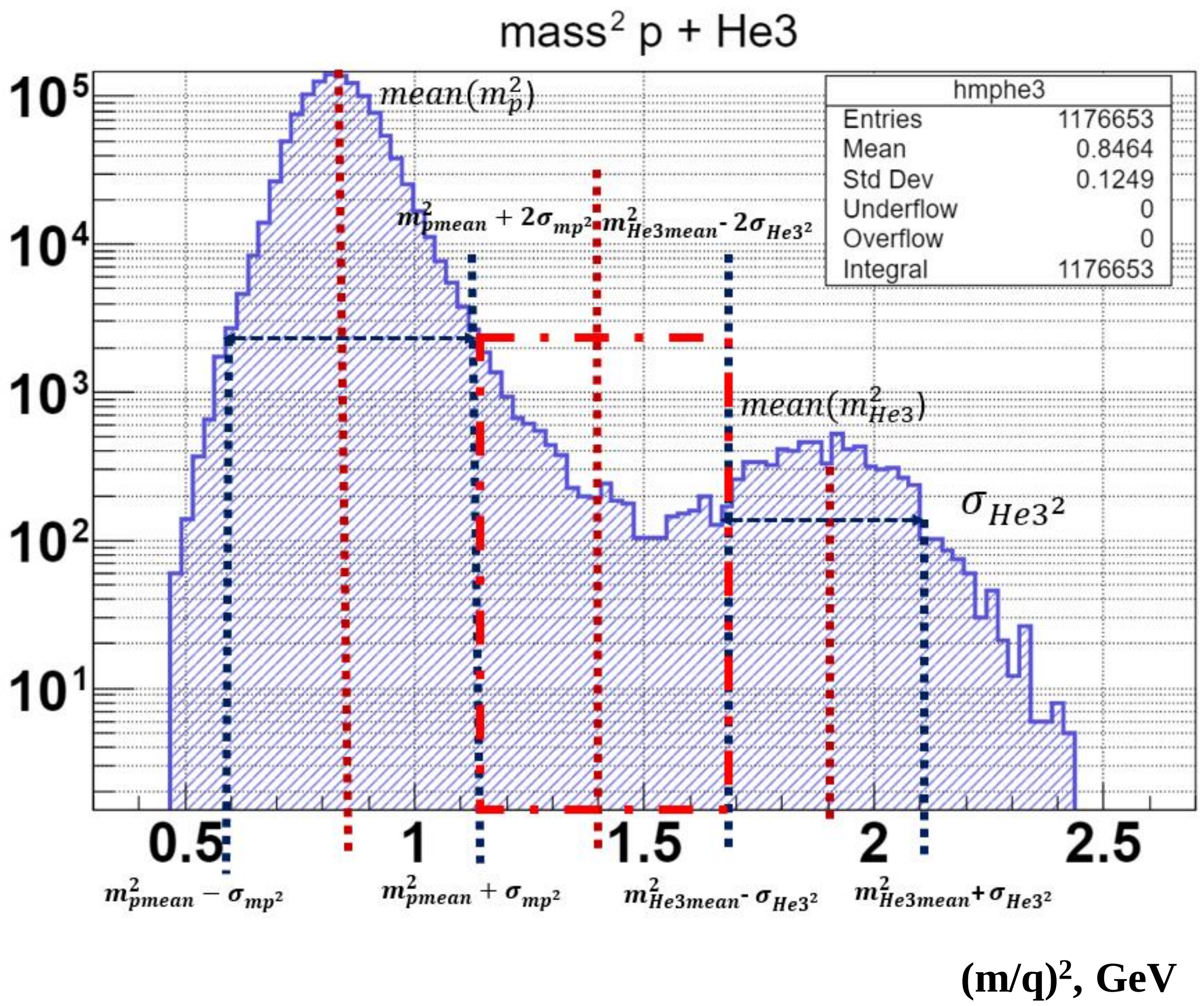


Distribution mean (m^2) of p/q for He_2^3



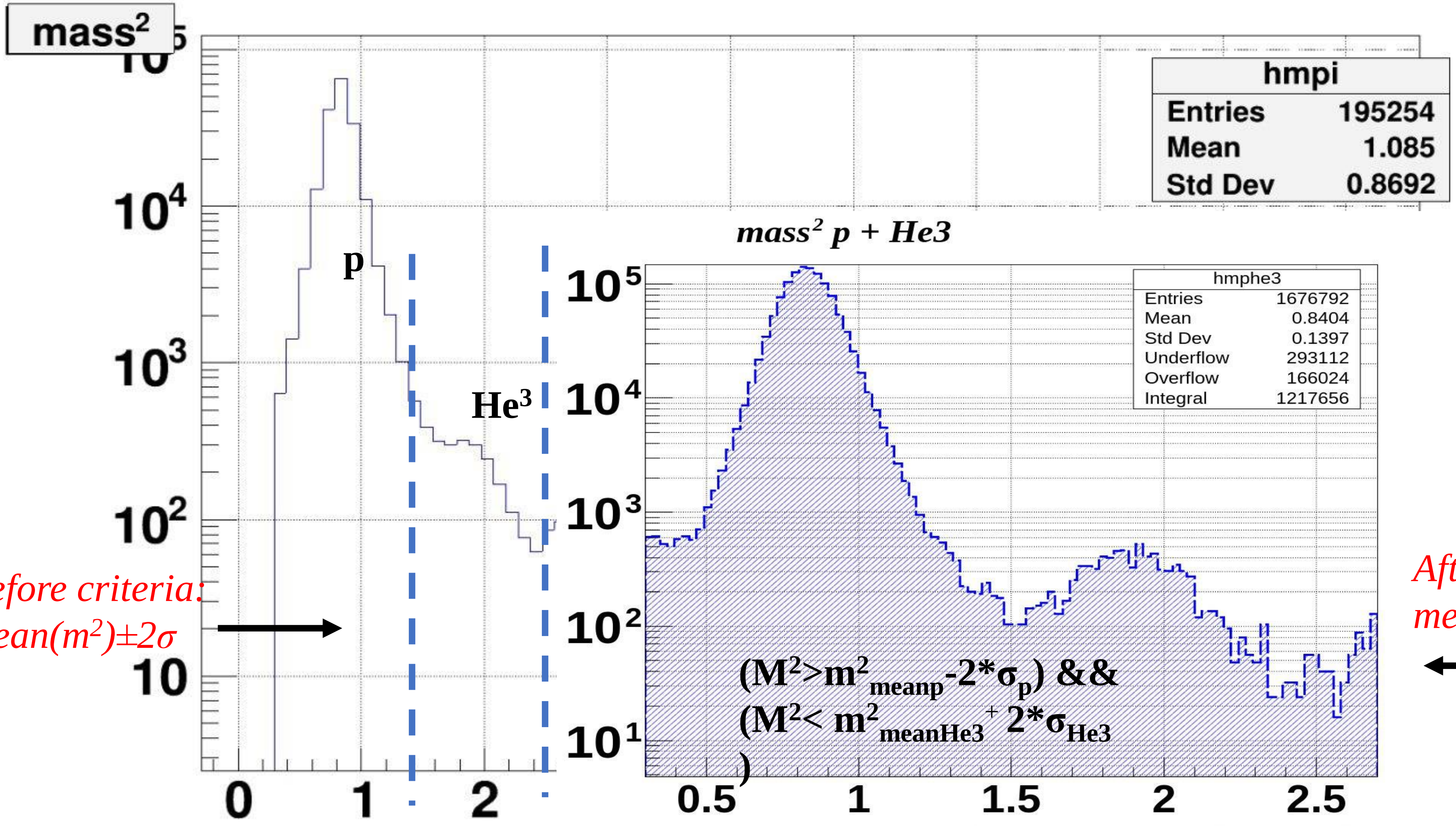
Distribution mean (m^2) vs p/q, mean (m^2) ±2σ





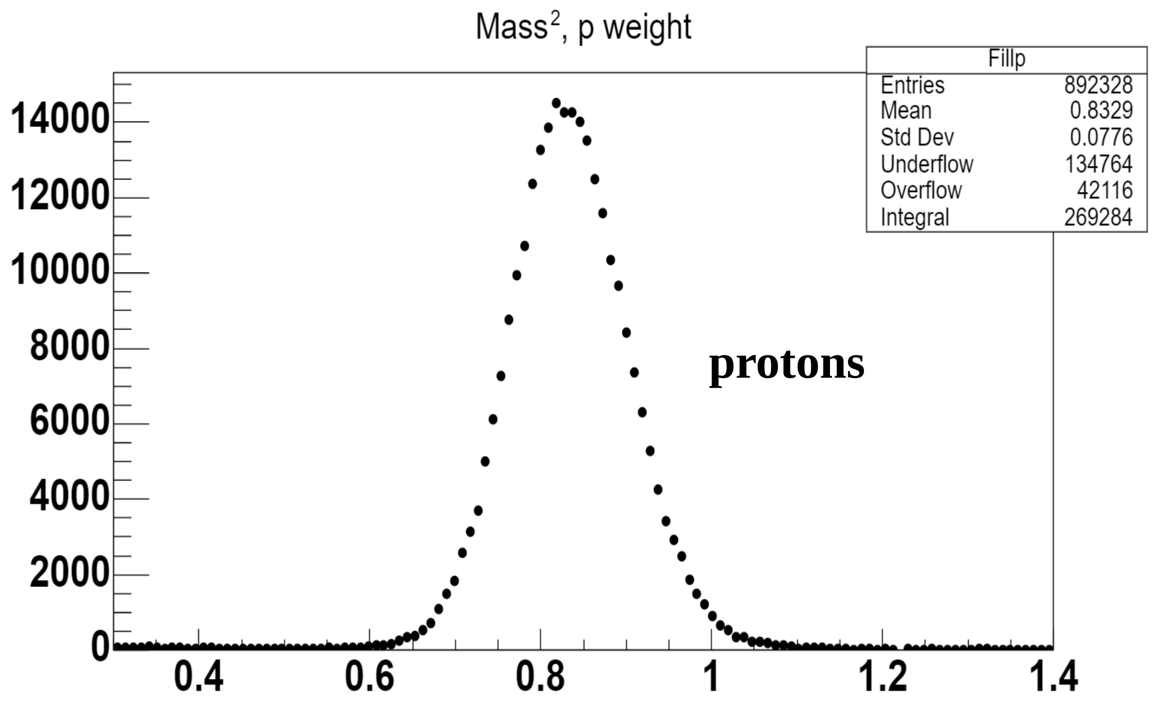
M^2 distribution for p and He^3

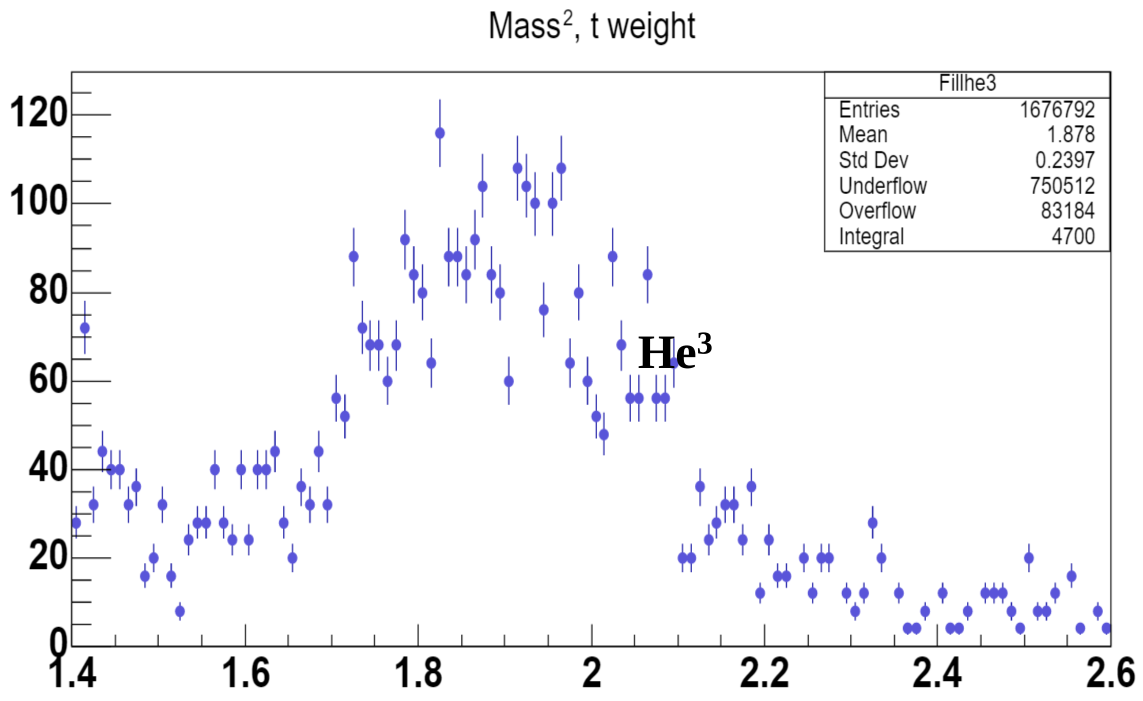
Before criteria: mean(m^2)±2σ



After criteria: mean (m^2) ±2σ

m^2(p,He3)distribution weighted for Ar data

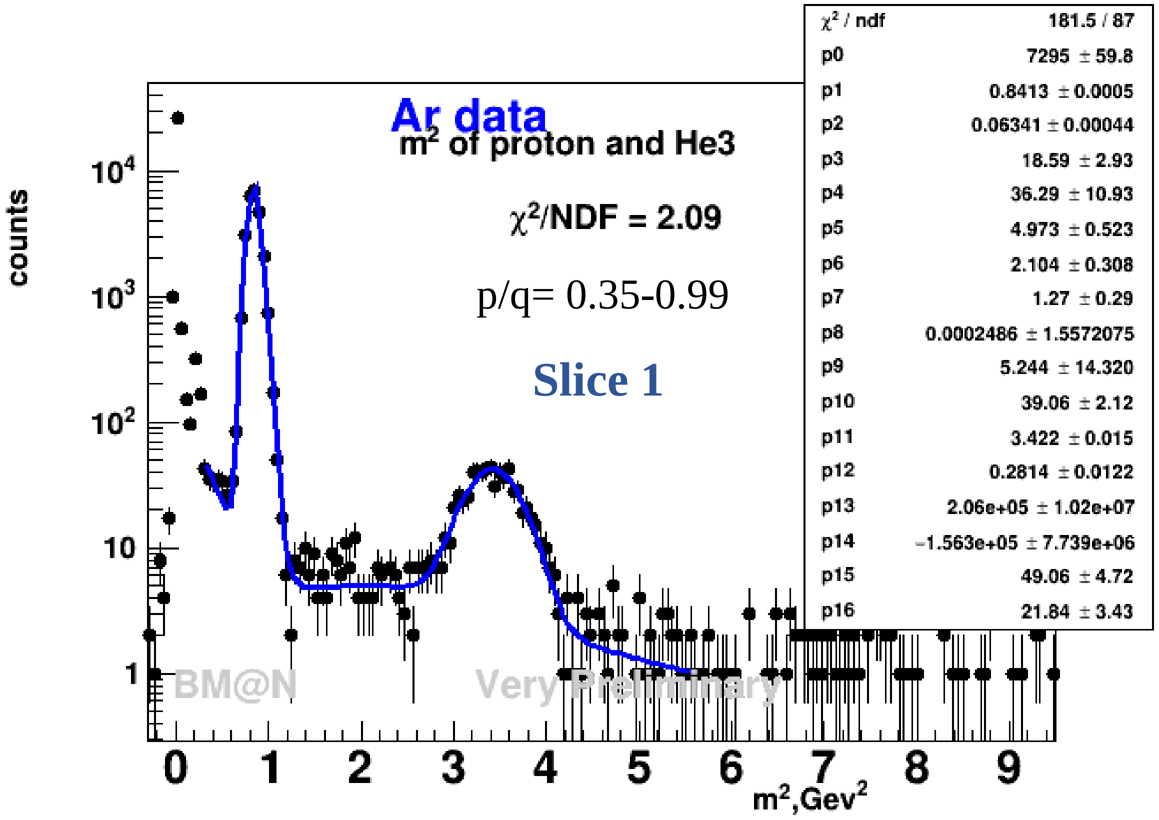


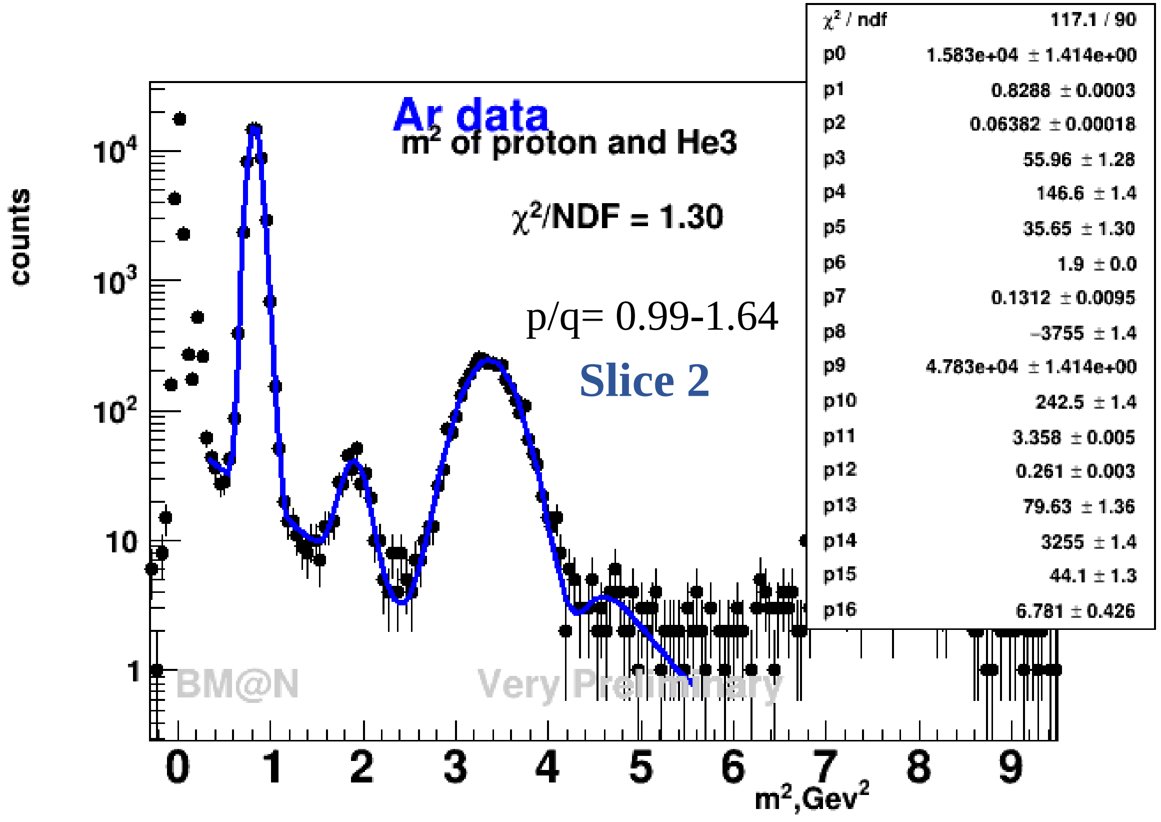


$$\rho_p = MODGauss(m^2_{meanp}, \sigma_{mp^2});$$
$$\rho_{He3} = MODGauss(m^2_{meanHe3}, \sigma_{mHe3^2});$$
$$\omega_p = \frac{\rho_p}{\rho_p+\rho_{He3}}; \ \omega_{He3} = \frac{\rho_{He3}}{\rho_p+\rho_{He3}};$$

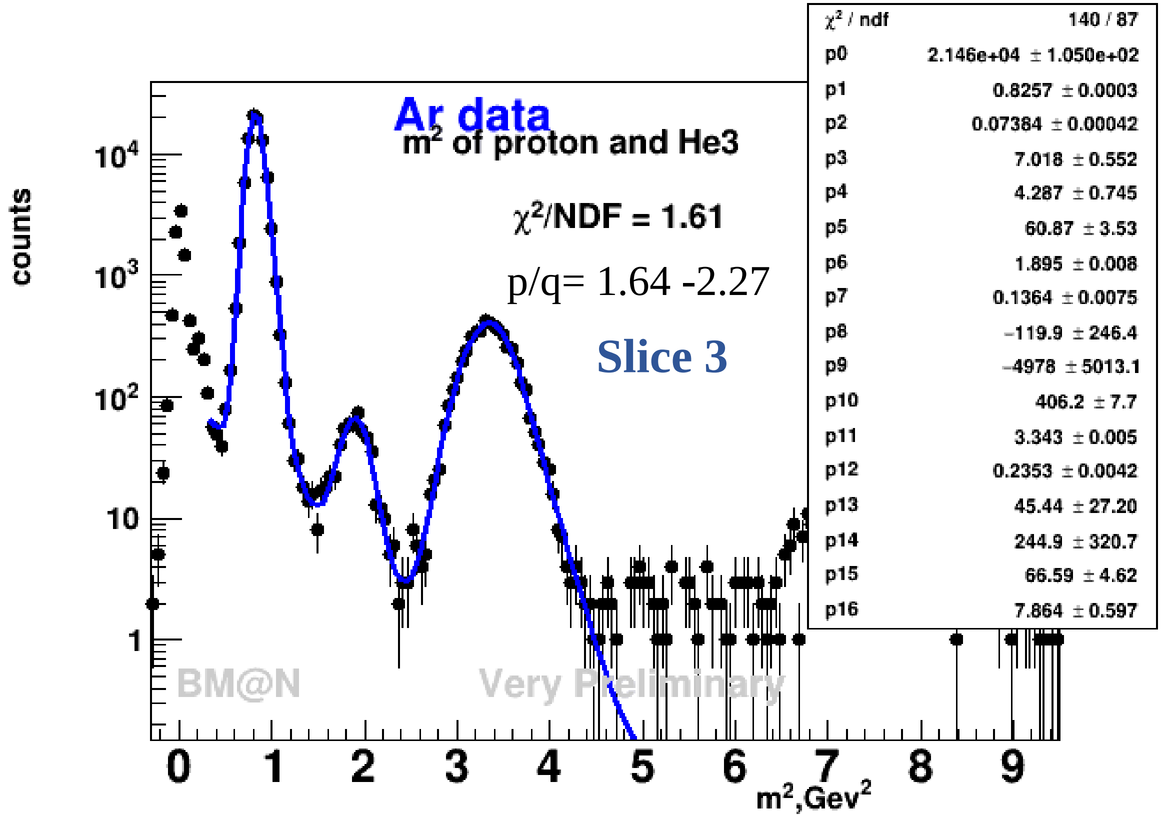
Fit three peaks for p ,He^3,d

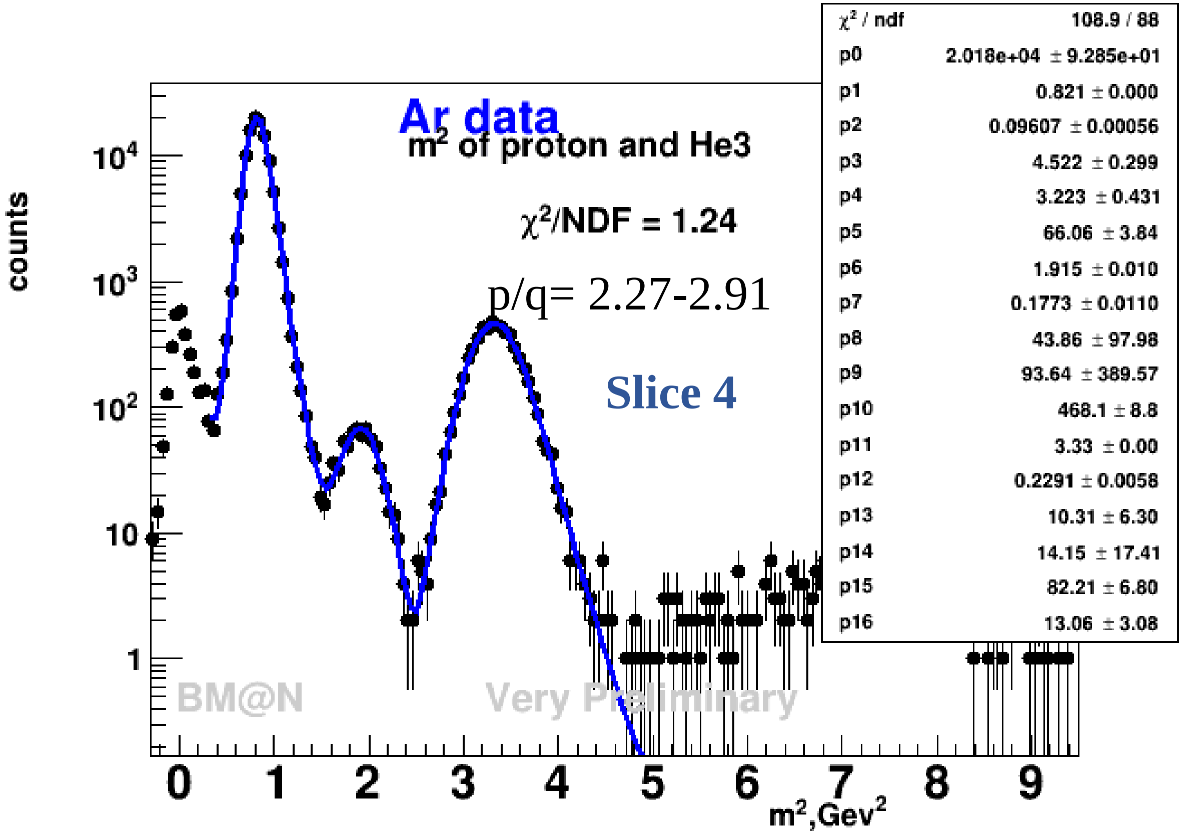
Slice (m^2 vs p/q) fit ModGauss(**1st peak**) + ModGauss(**2nd peak**) + ModGauss(**3nd peak**) + expo(**background**)



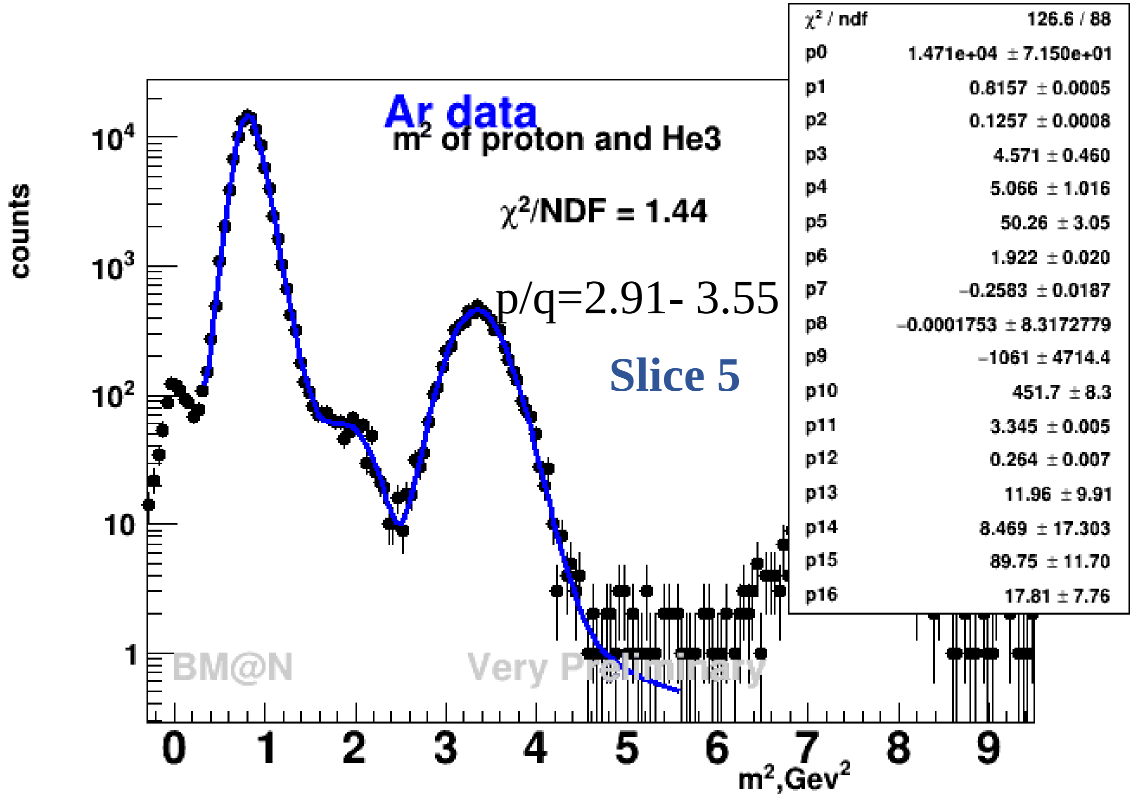


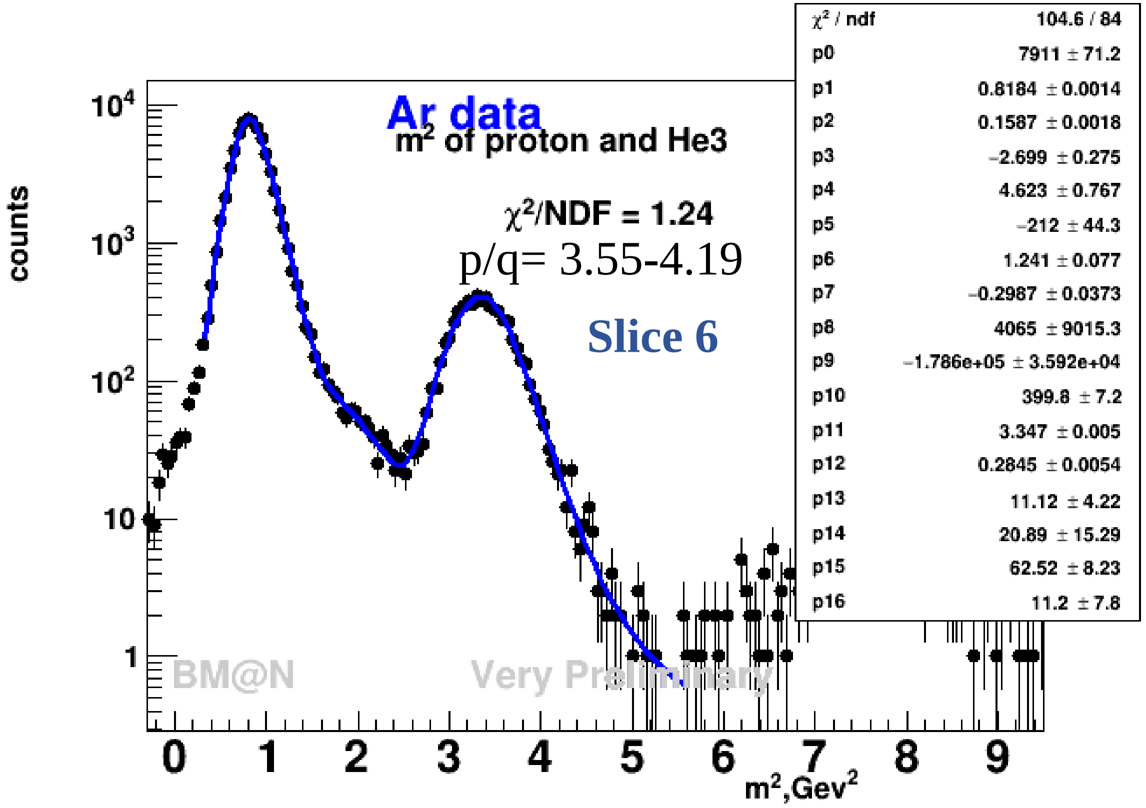
Slice (m^2 vs p/q) fit ModGauss(**1st peak**) + ModGauss(**2nd peak**) + ModGauss(**3nd peak**) + expo(**background**)



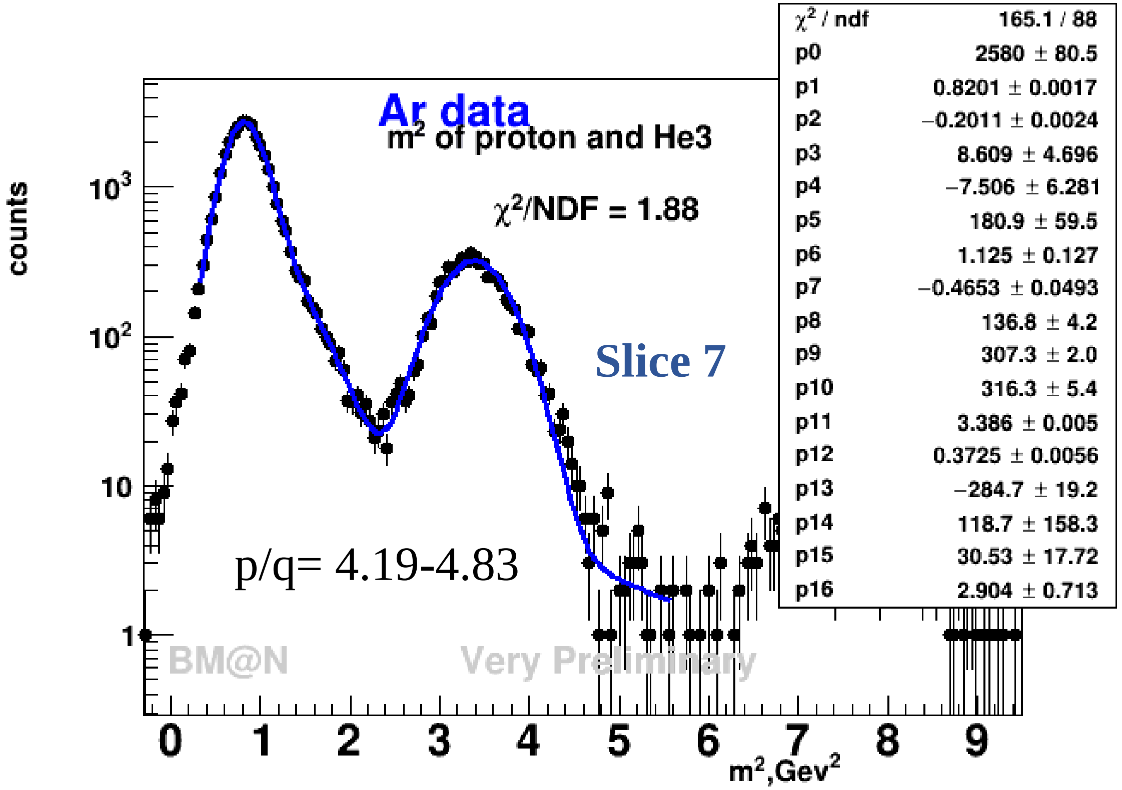


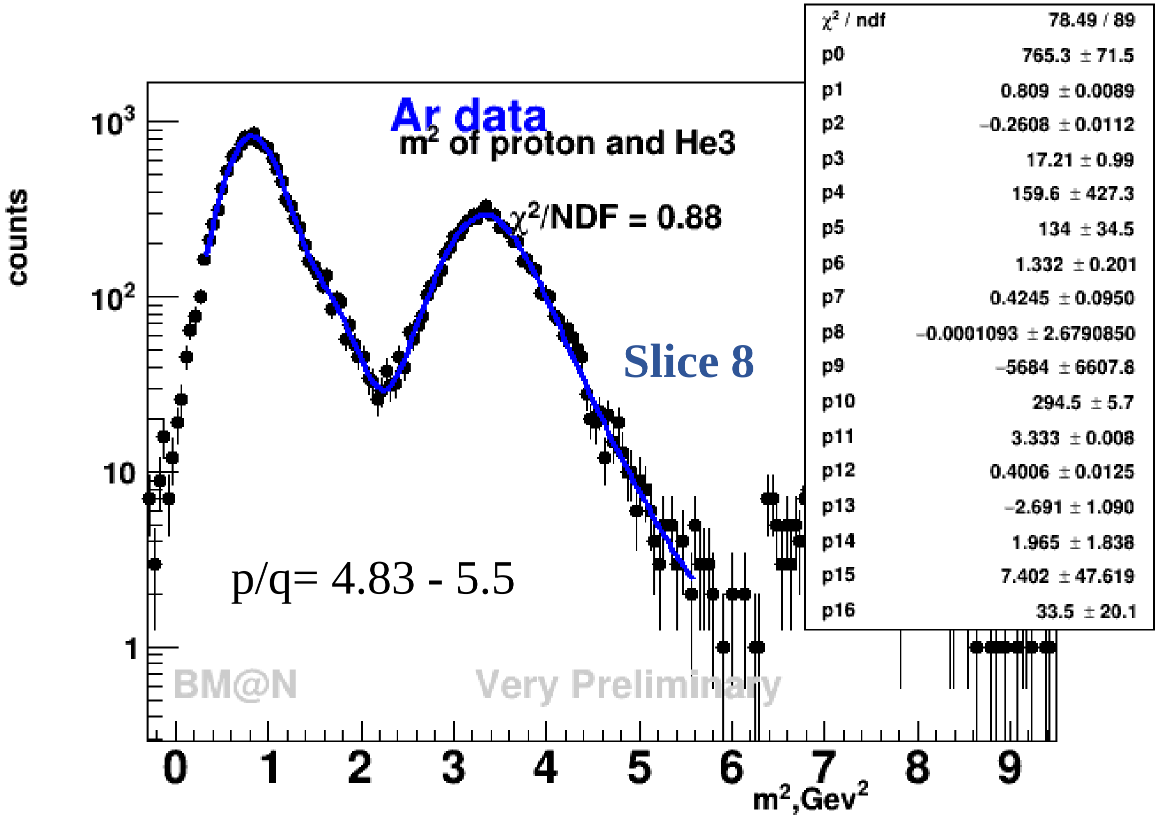
Slice (m^2 vs p/q) fit ModGauss(**1st peak**) + ModGauss(**2nd peak**) + ModGauss(**3nd peak**) + expo(**background**)



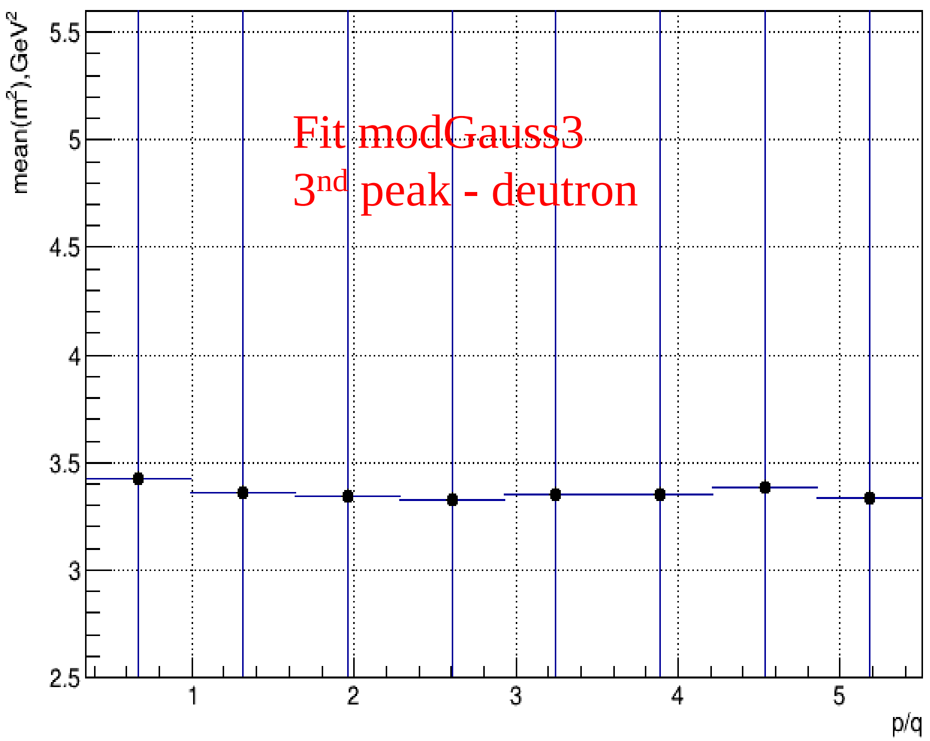


Slice (m^2 vs p/q) fit ModGauss(**1st peak**) + ModGauss(**2nd peak**) + ModGauss(**3nd peak**) + expo(**background**)

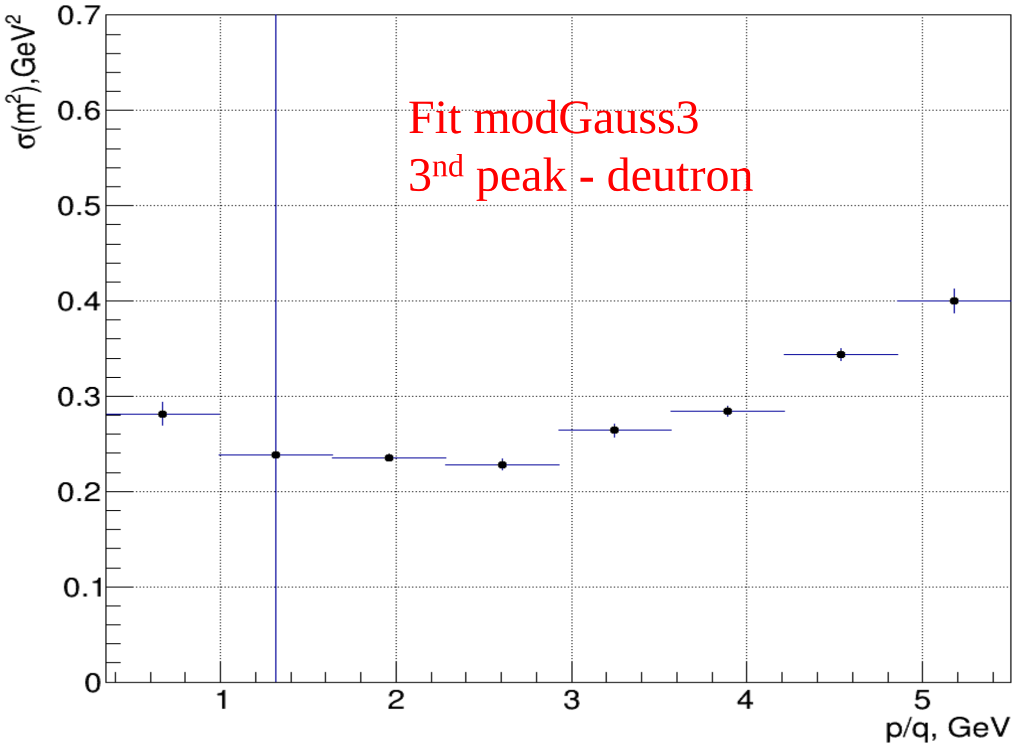




Distribution mean (m^2) of p/q for deutron



Distribution σ(m^2) of p/q for deutron



Distribution mean (m^2) vs p/q, mean (m^2) ±2σ