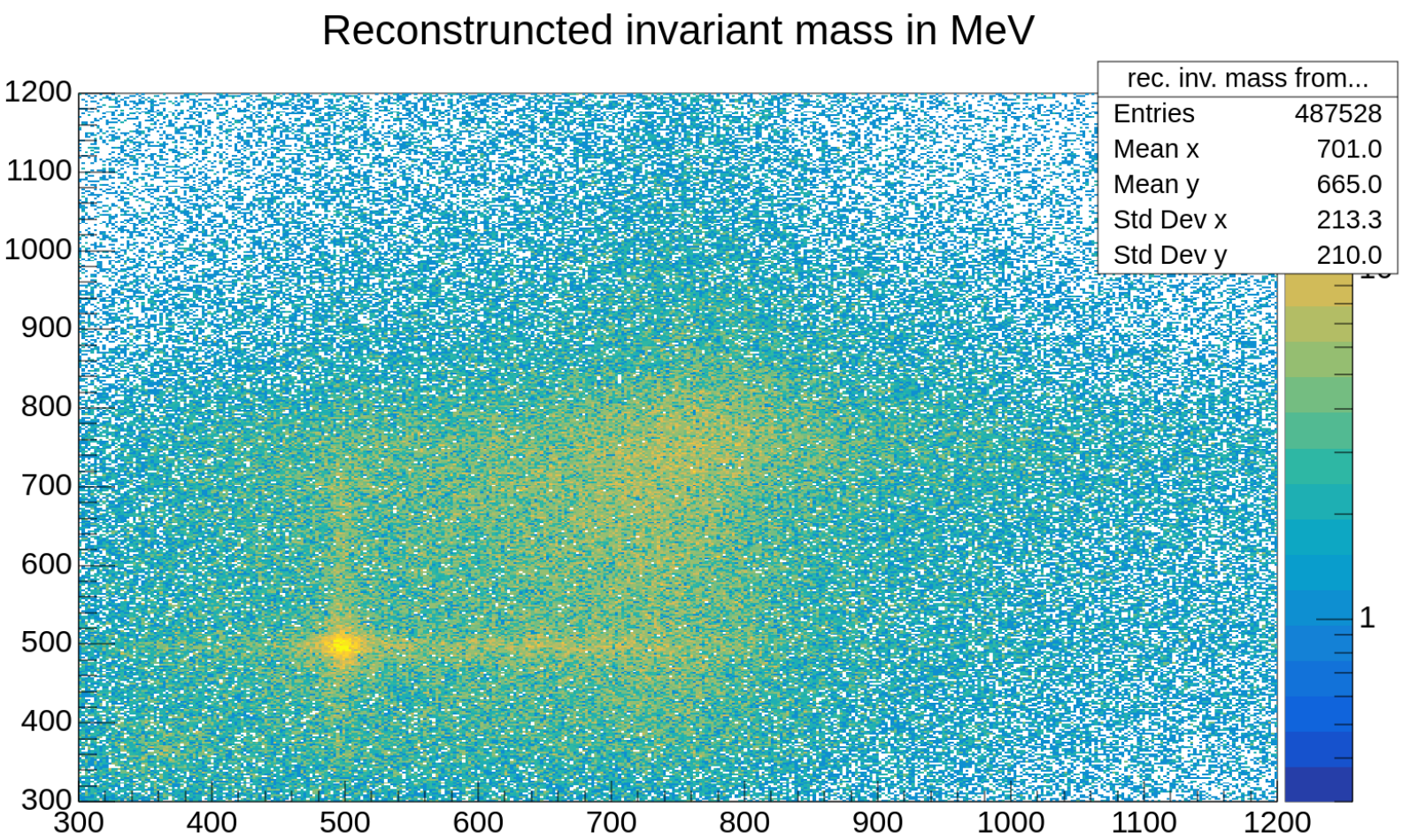
Progress report

Jan Loder

Helsinki Institute of Physics

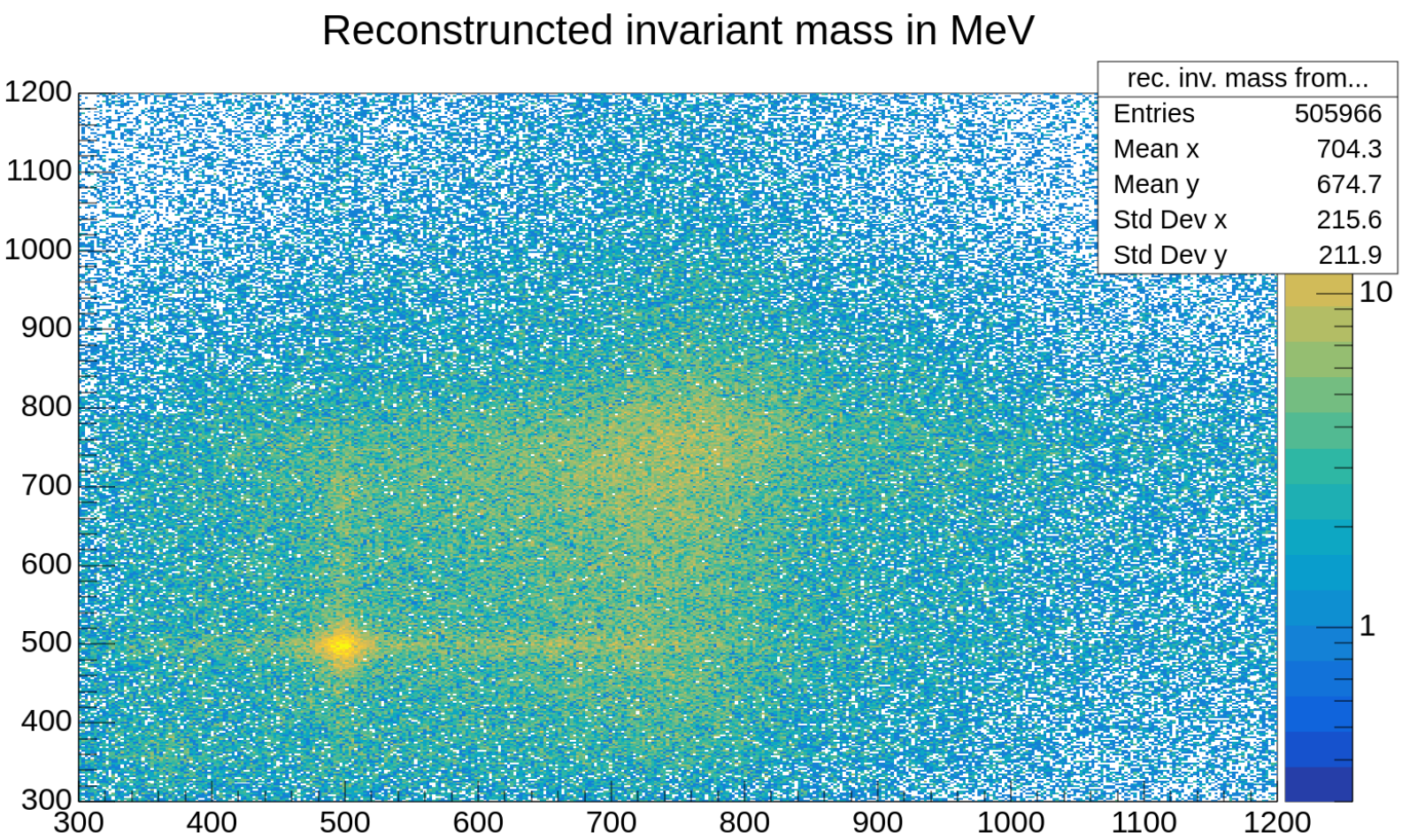
17 July, 2025

ρ invariant mass reconstruction



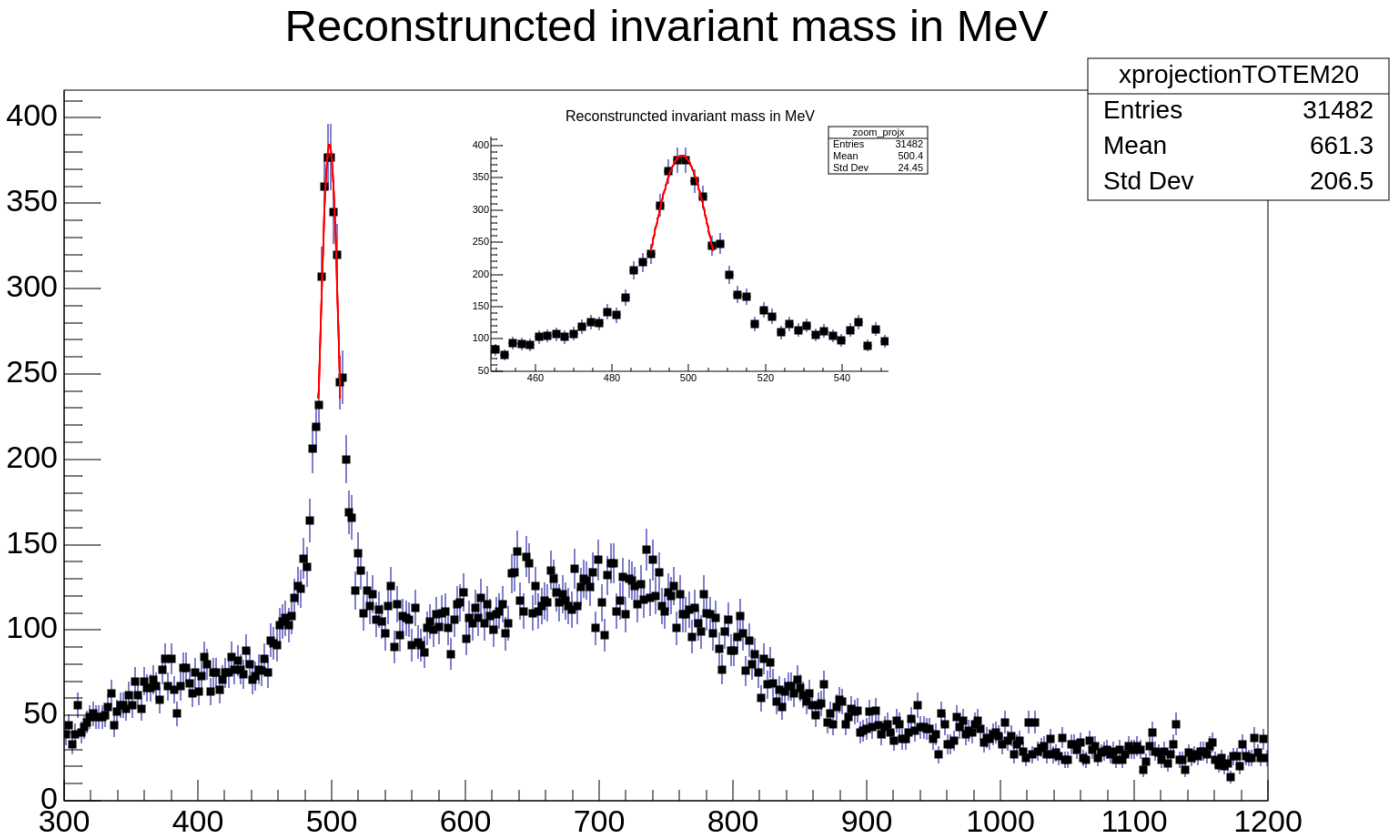
TOTEM20

ρ invariant mass reconstruction



TOTEM40

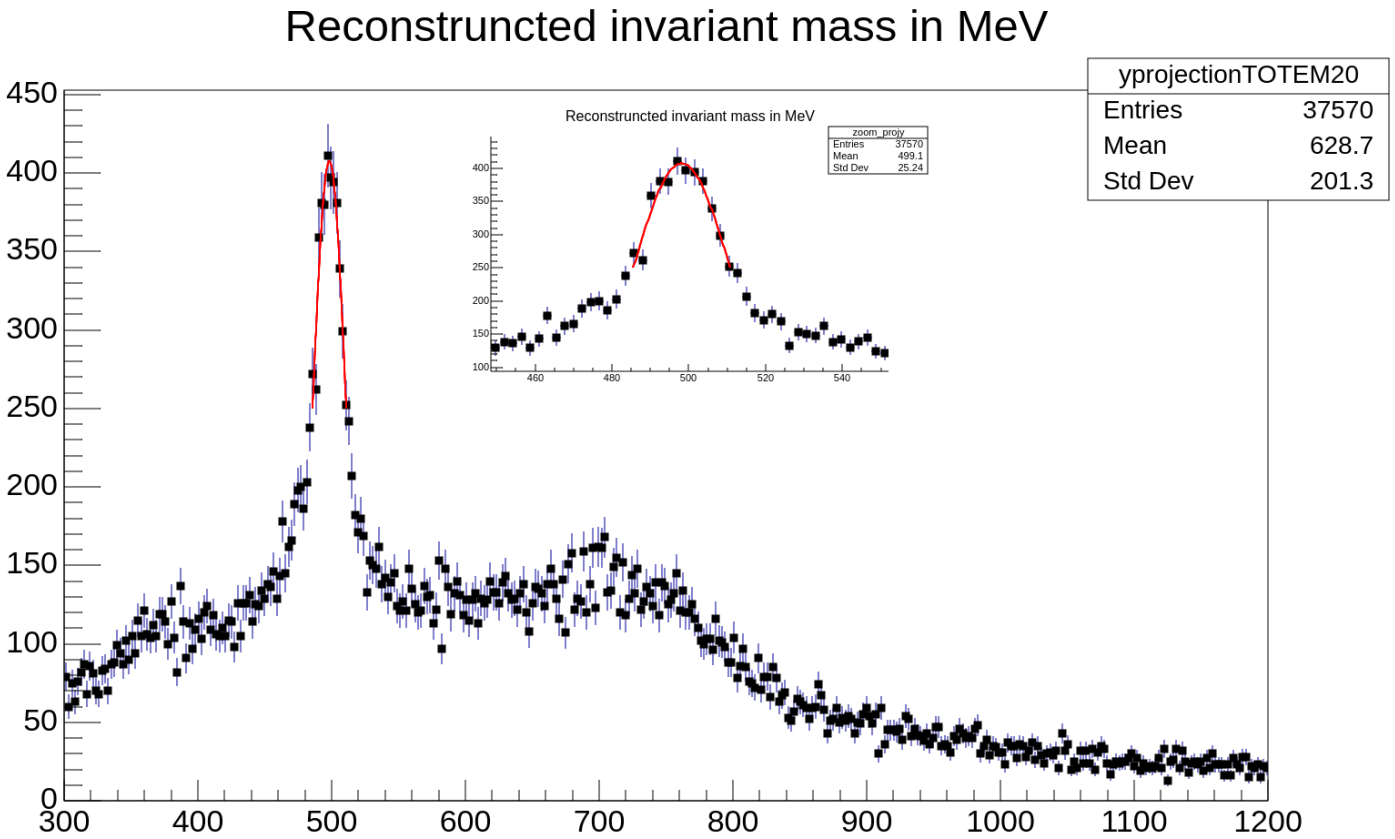
Kaon mass fit x



$$\mu_x = 498.144(280)\,\text{MeV}$$
$$\sigma_x = 8.216(492)\,\text{MeV}$$

- Used $\pm 3\sigma$ for summation in projection and $\pm 1\sigma$ for fitrange
- PDG value: $m_{K_0} = 497.677(13)\,\text{MeV}$

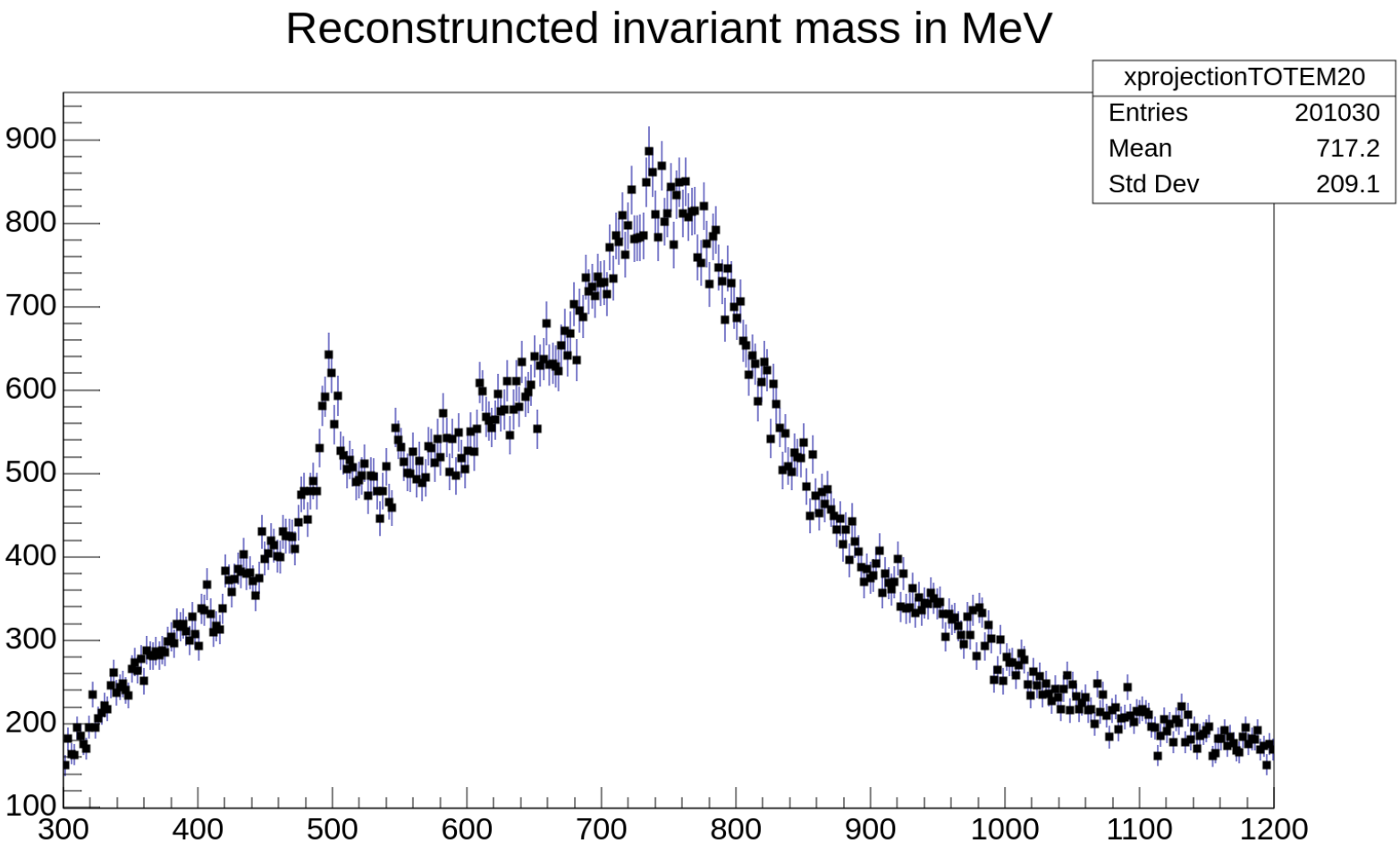
Kaon mass fit y



$$\mu_y = 498.056(351)\,\text{MeV}$$
$$\sigma_y = 12.751(641)\,\text{MeV}$$

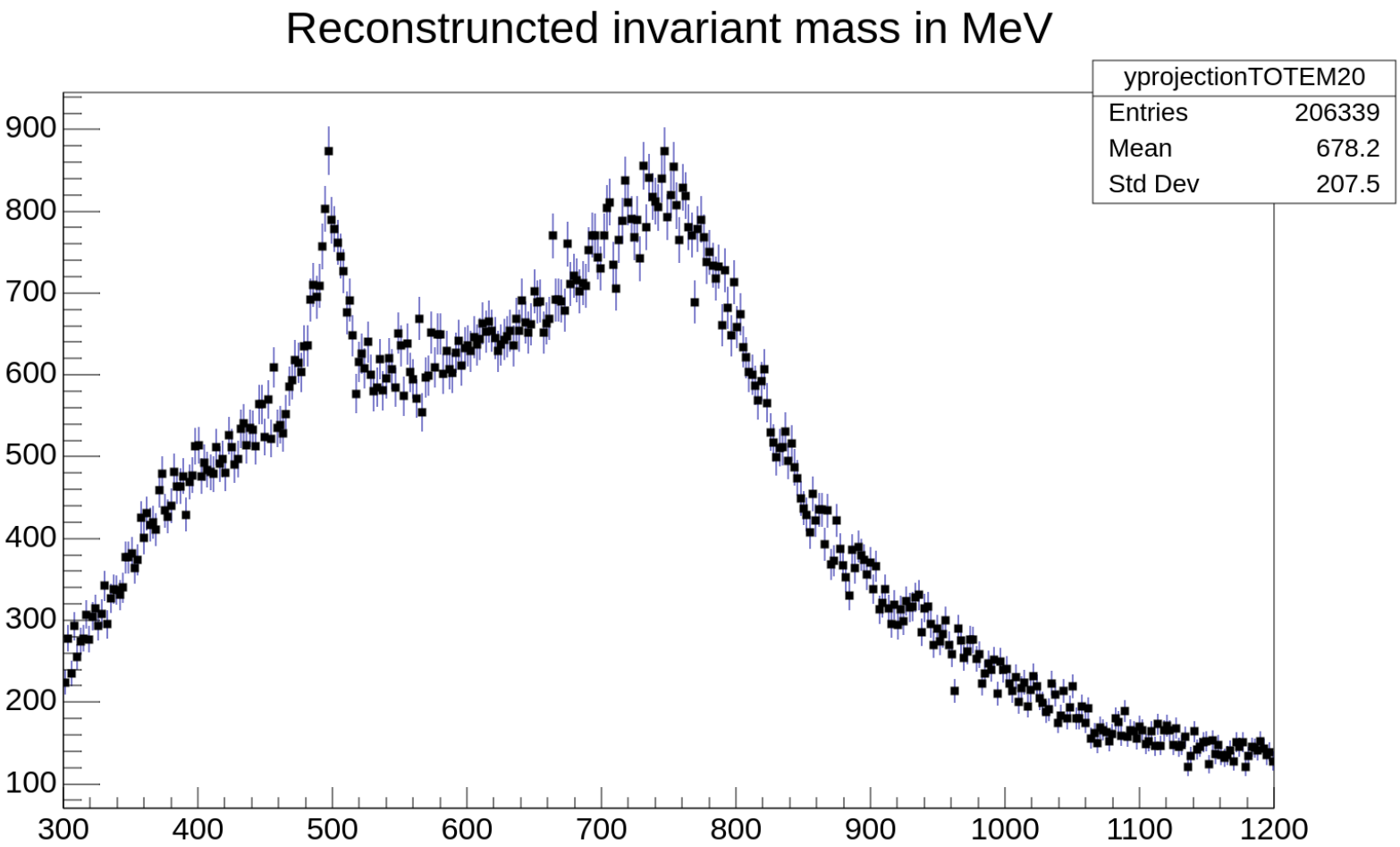
- Used $\pm 3\sigma$ for summation in projection and $\pm 1\sigma$ for fitrange
- PDG value: $m_{K_0} = 497.677(13)\,\text{MeV}$

x-projection around rho candidate



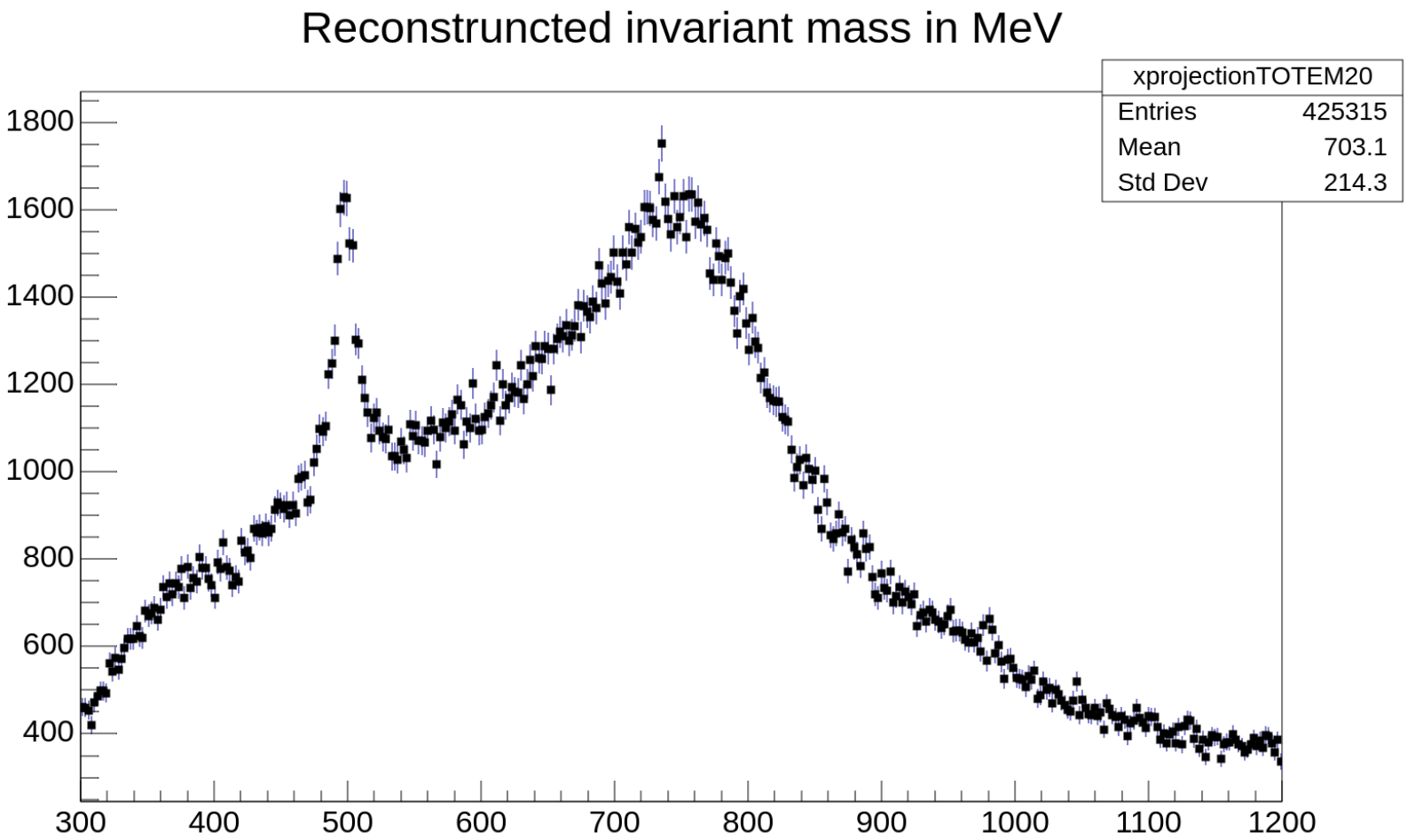
TOTEM20 (x-projection window 770 ± 200MeV)

y-projection around rho candidate



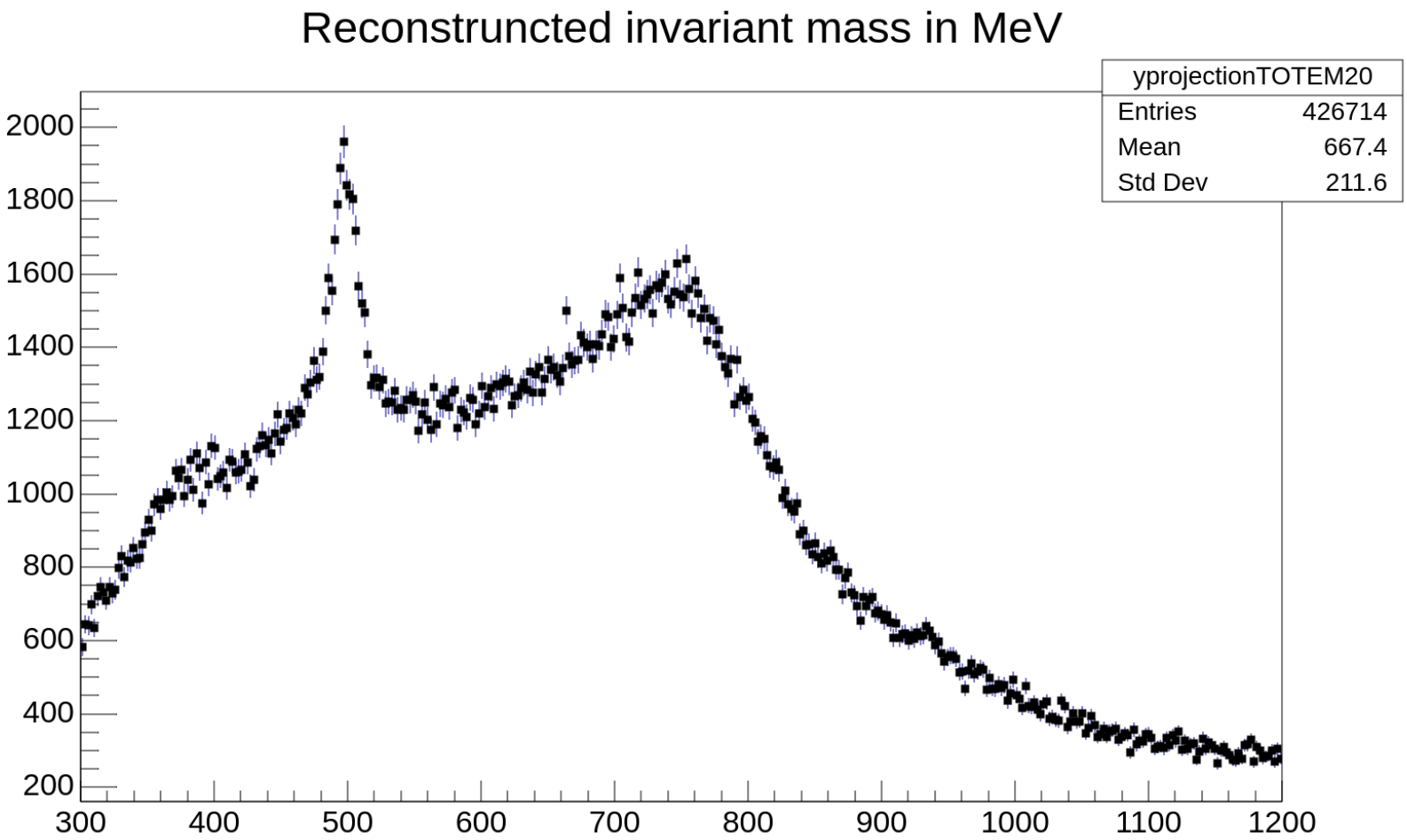
TOTEM20 (y-projection window 770 ± 200MeV)

x-projection complete range



TOTEM20 (x-projection window $[300, 1200]$MeV)

y-projection complete range



TOTEM20 (y-projection window $[300, 1200]$MeV)

Next Steps

- Check if peaks match in x and y projections
- Cuts to reduce background and wrong matching in mass reconstrunction
- Combine TOTEM2x/TOTEM4x files for better statistics ?