

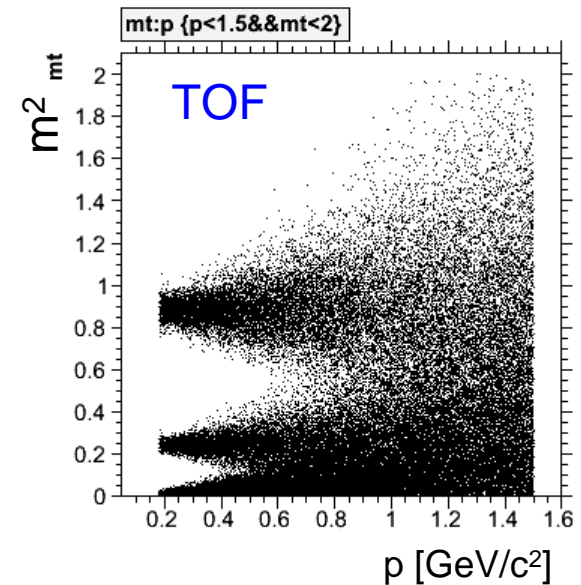
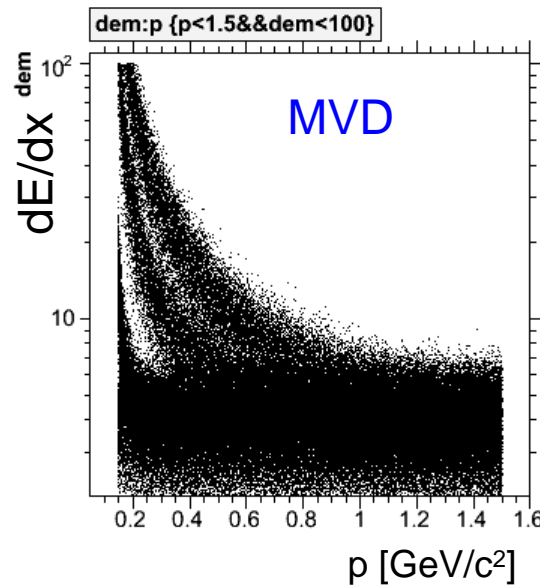
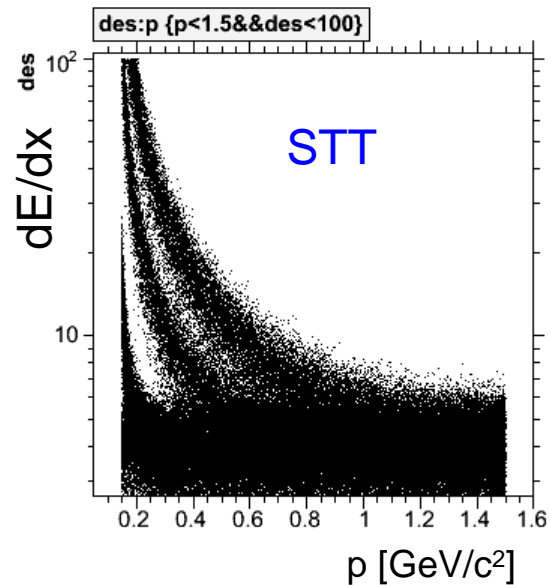
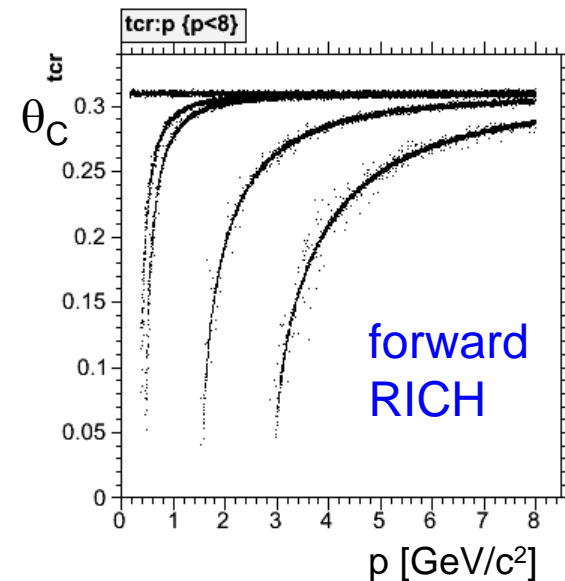
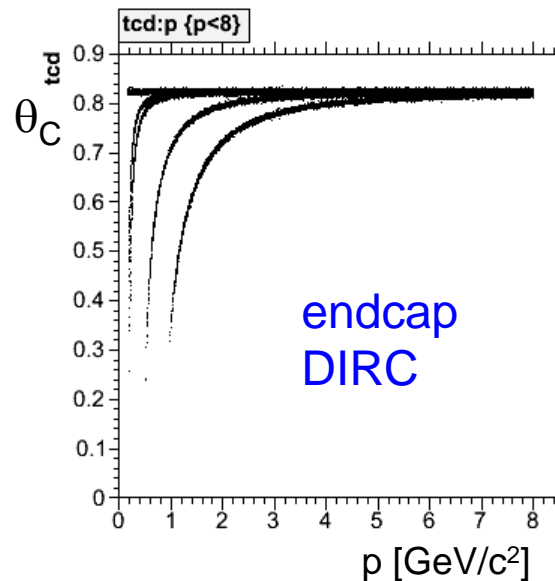
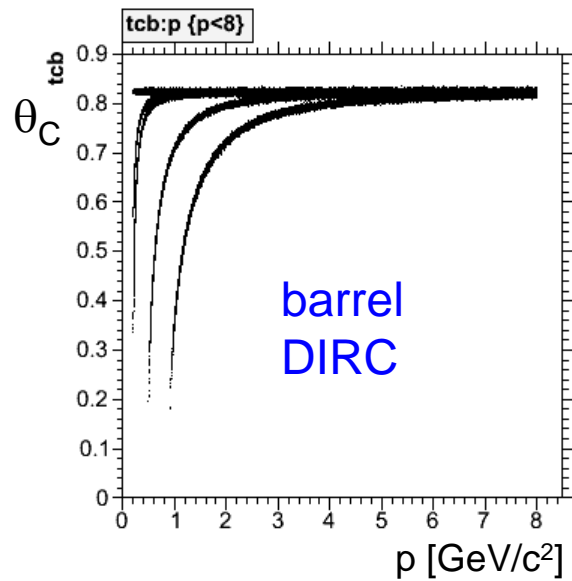


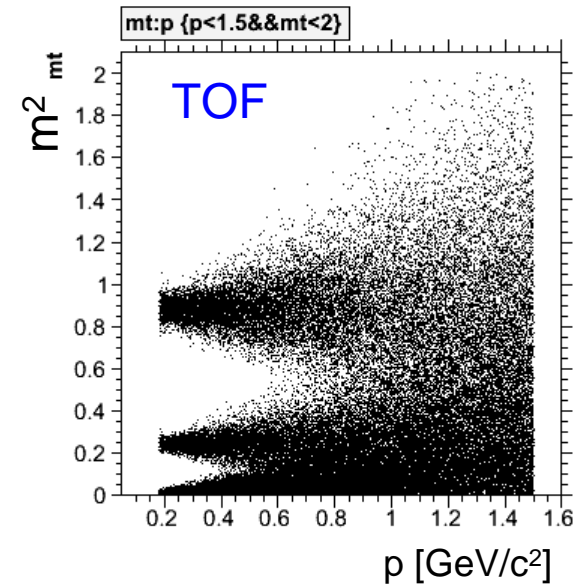
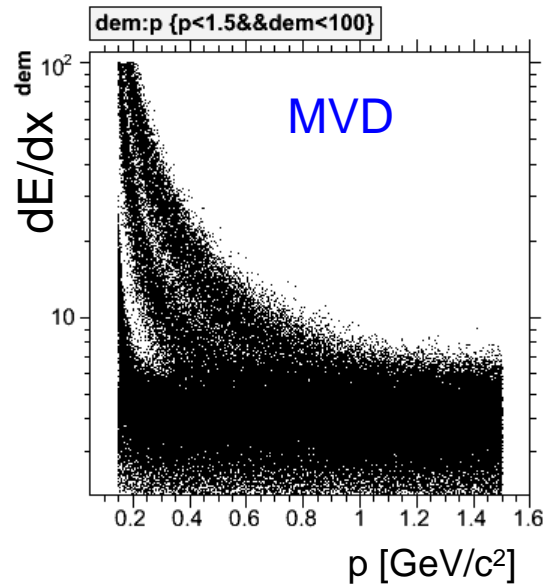
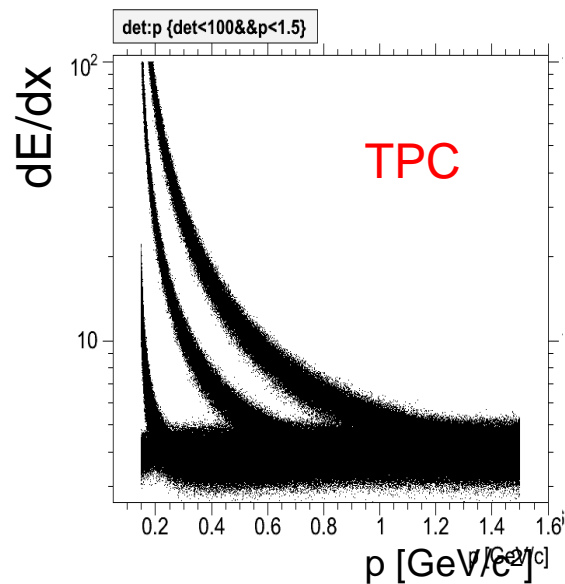
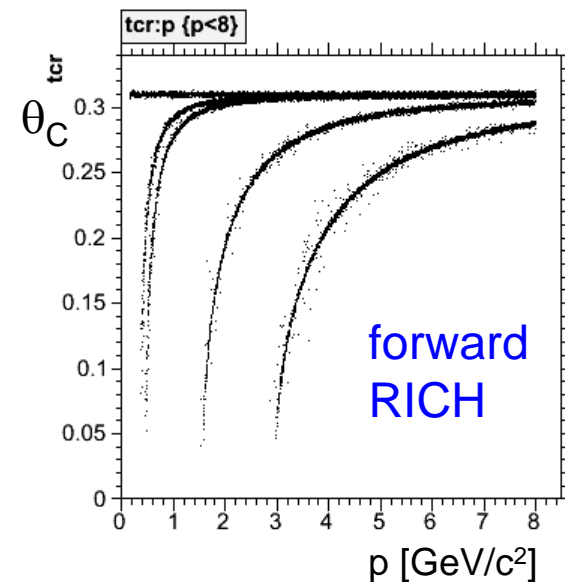
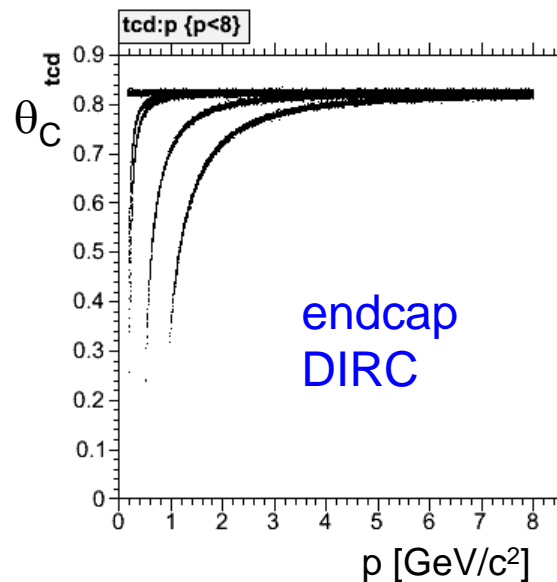
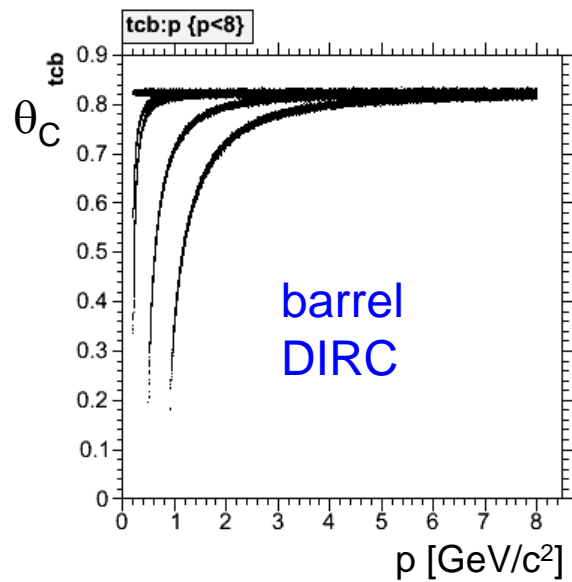
Mapping separation power update!

Klaus Götzen
GSI Darmstadt

19. Feb. 2007

- Updated plots for
 - Finer binning
 - Higher statistics
 - TPC
 - e/pi separation
- Also modified
 - n_σ range up to 8σ
 - p up to 6 GeV/c

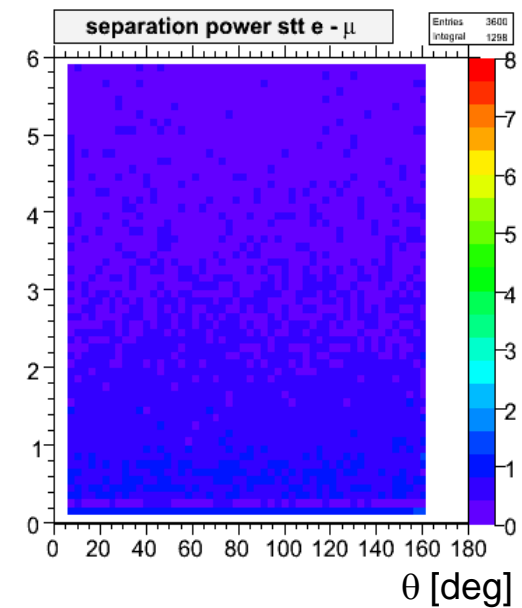
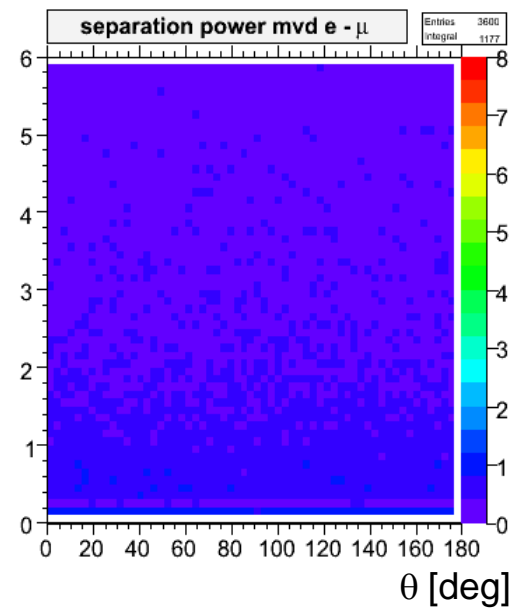
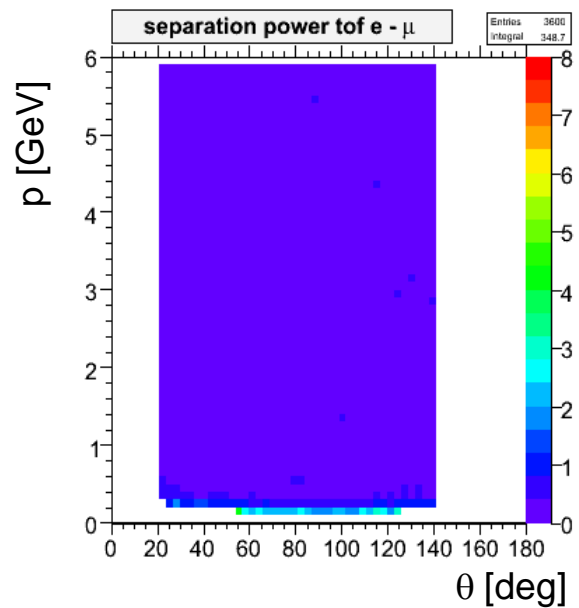
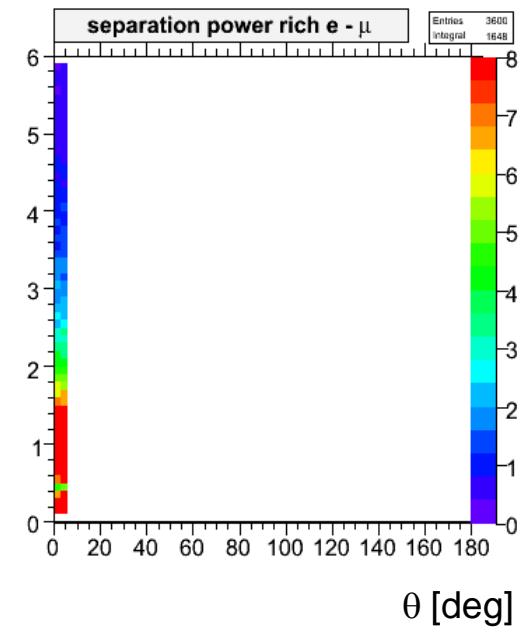
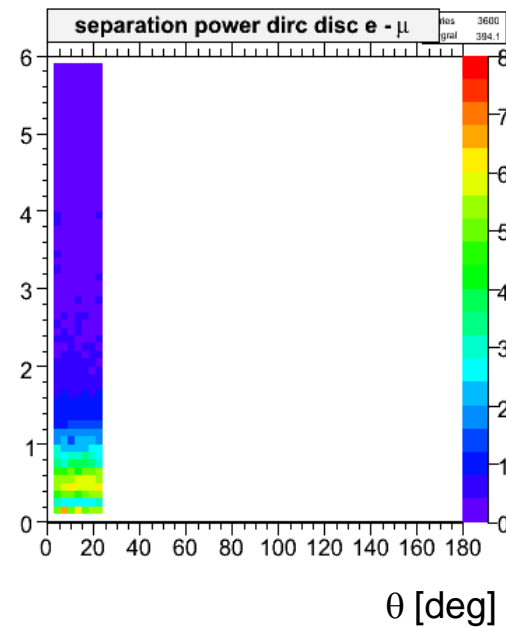
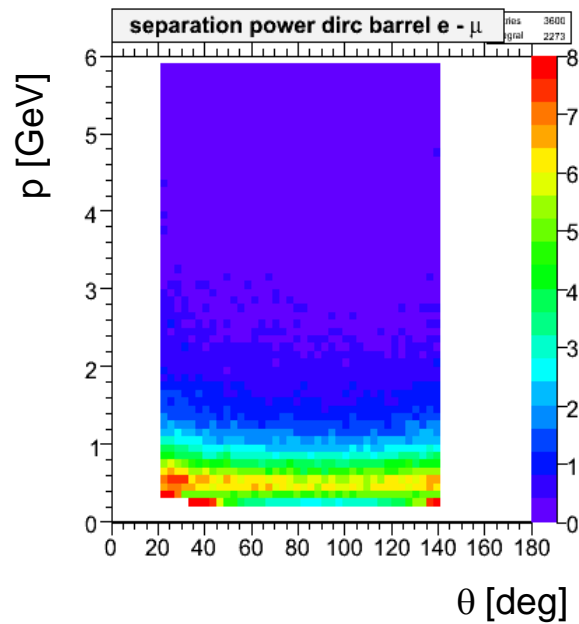


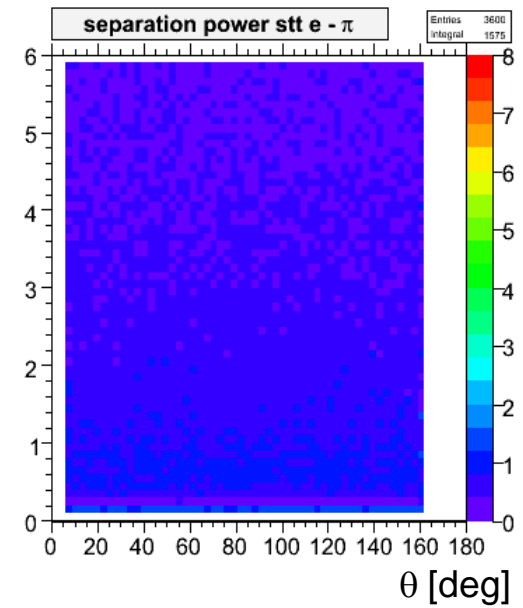
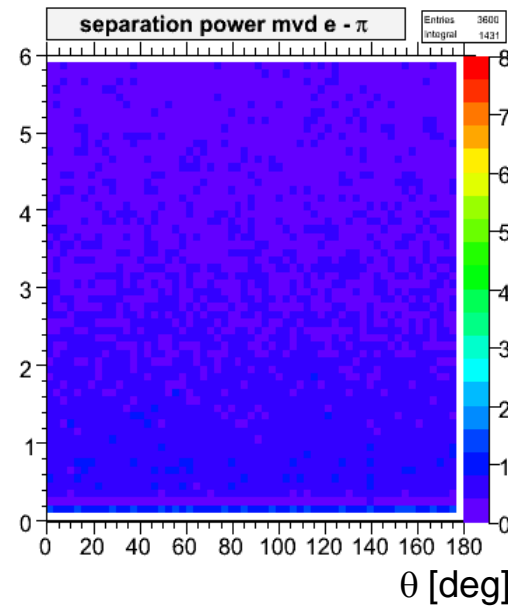
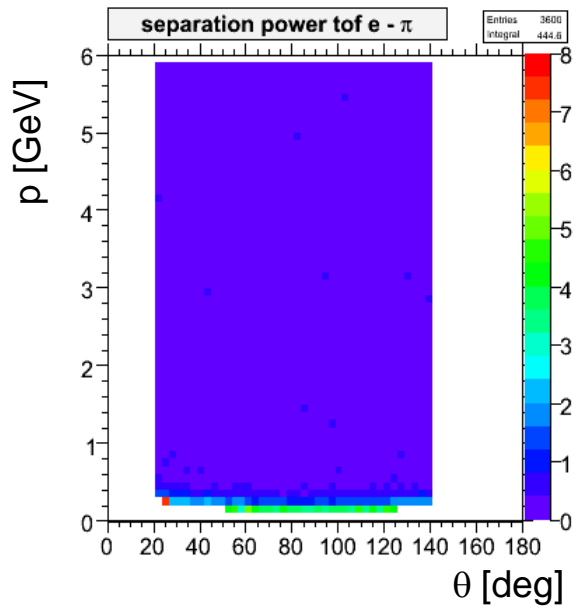
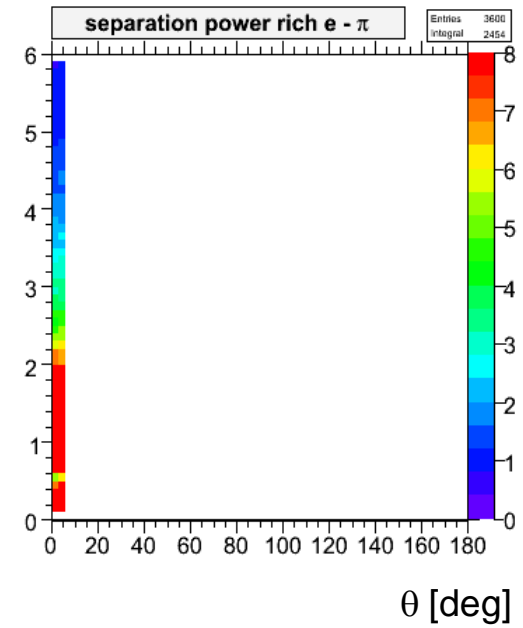
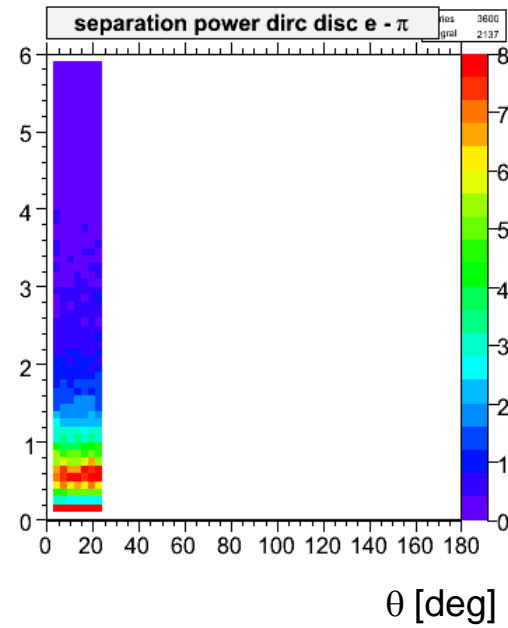
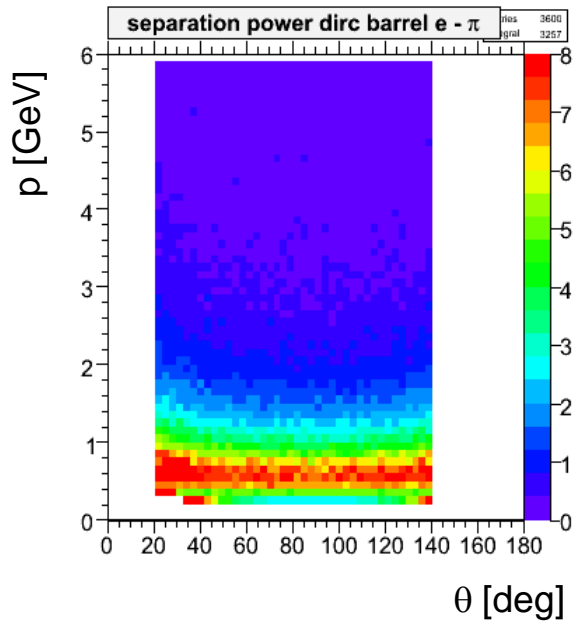


- Divide 2-D p, θ region into bins
- for every bin & every 2 PID hypothesis (only 'neighbours', i.e.: $e-\mu / \mu-\pi / \pi-K / K-p$)
 - plot the 2 distributions
 - determine mean values μ_i and RMS r_i for both hypothesis (e.g. π and K)
 - separation power (number sigmas) is estimated as

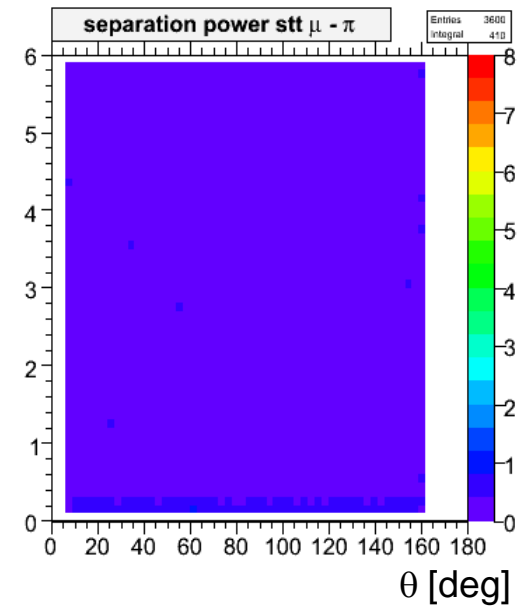
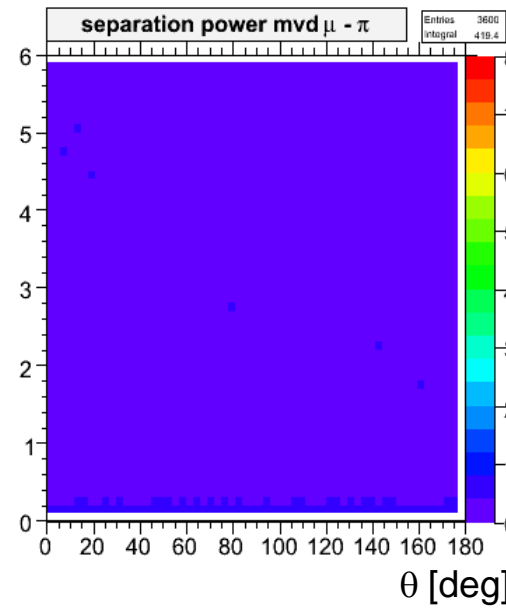
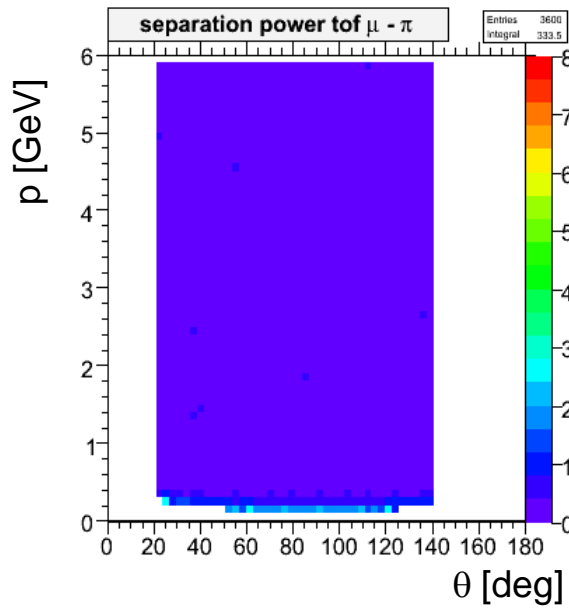
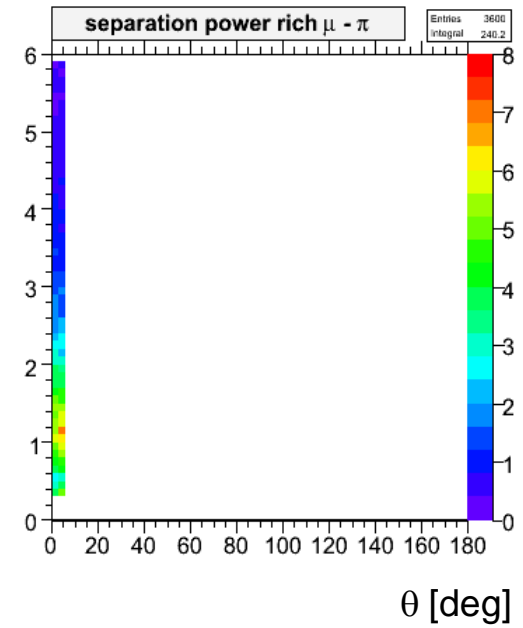
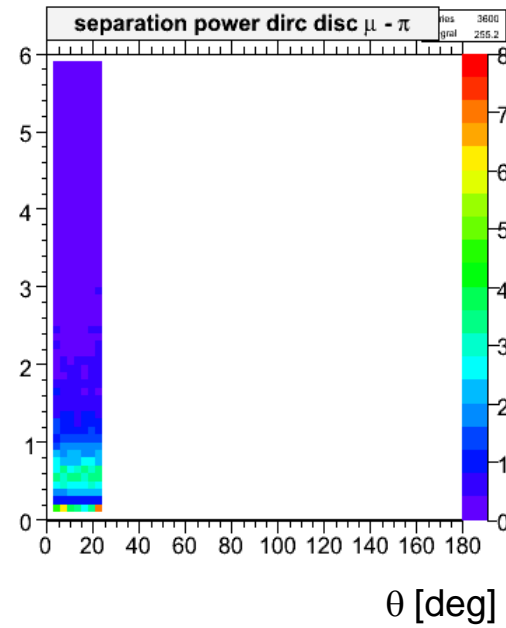
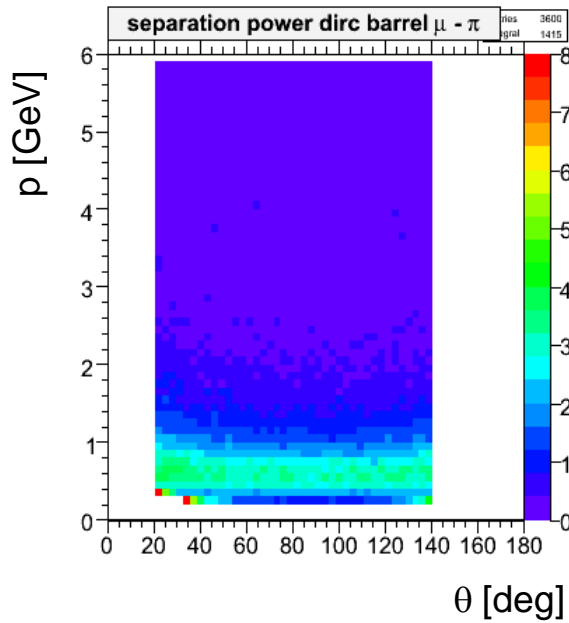
$$n_\sigma = \frac{|\mu_\pi - \mu_K|}{\max(r_\pi, r_K)}$$

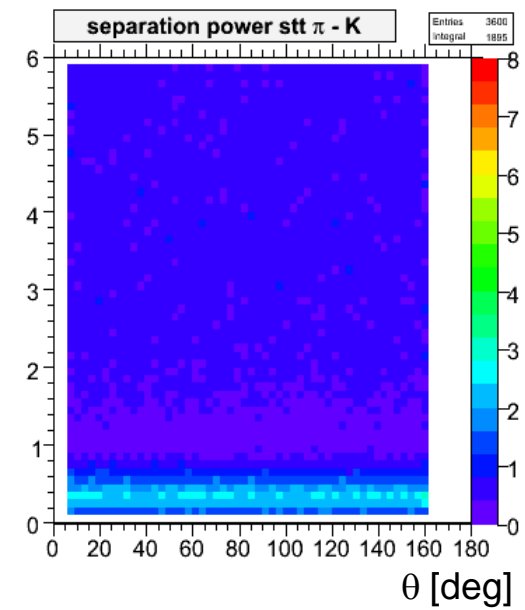
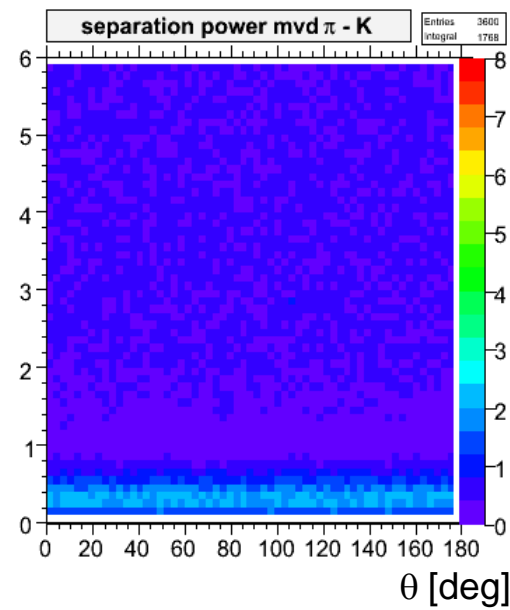
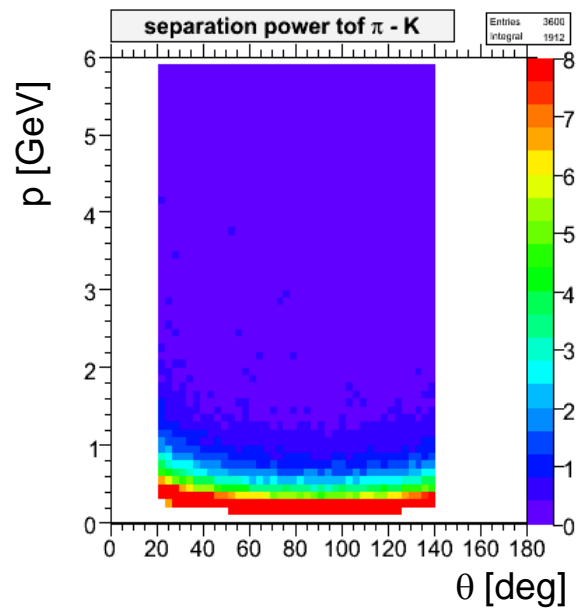
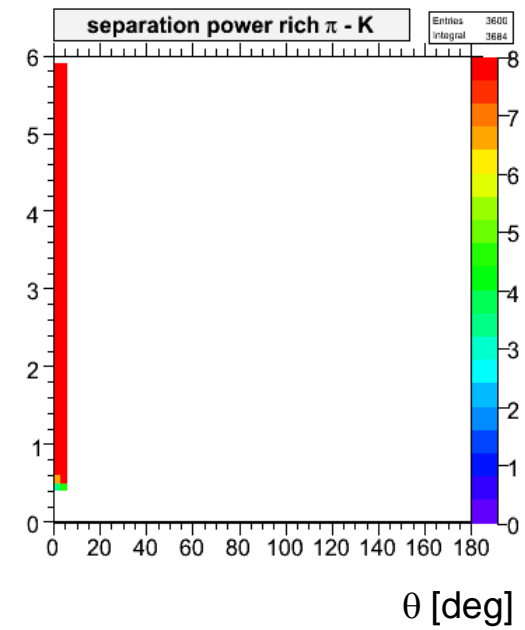
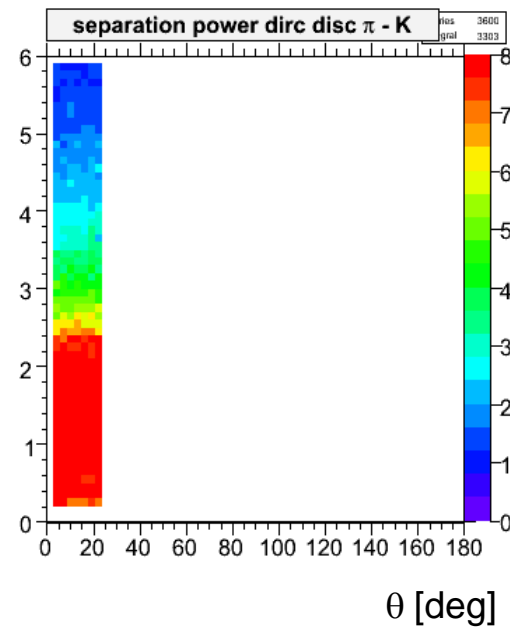
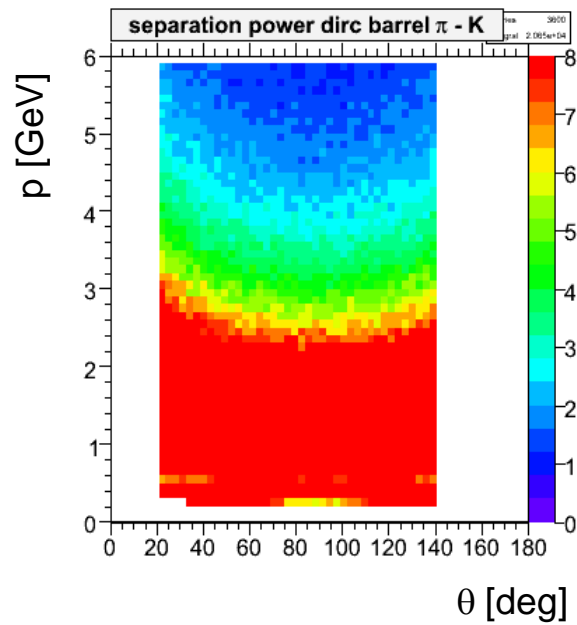
- colorize a 2-D map according to n_σ

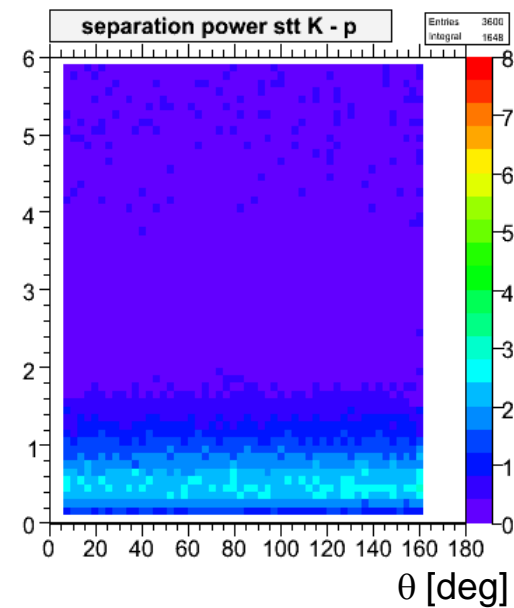
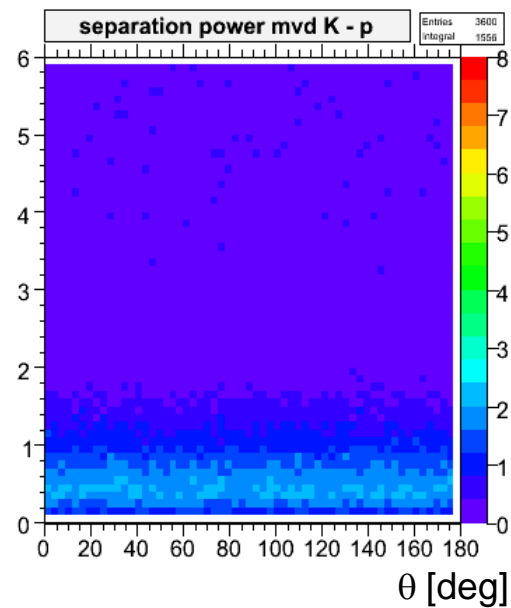
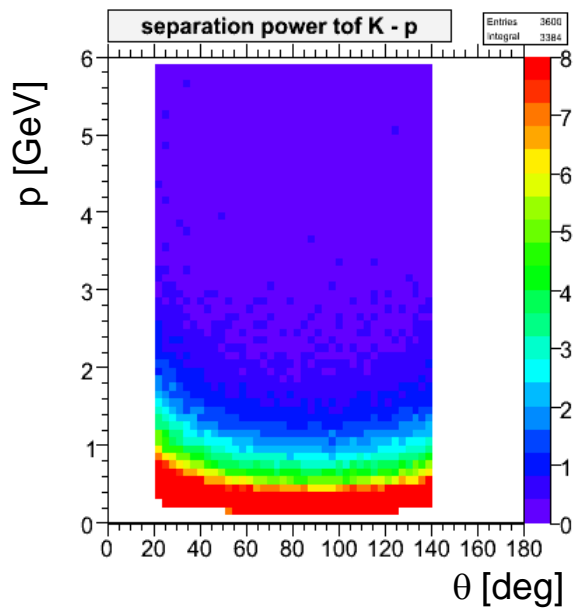
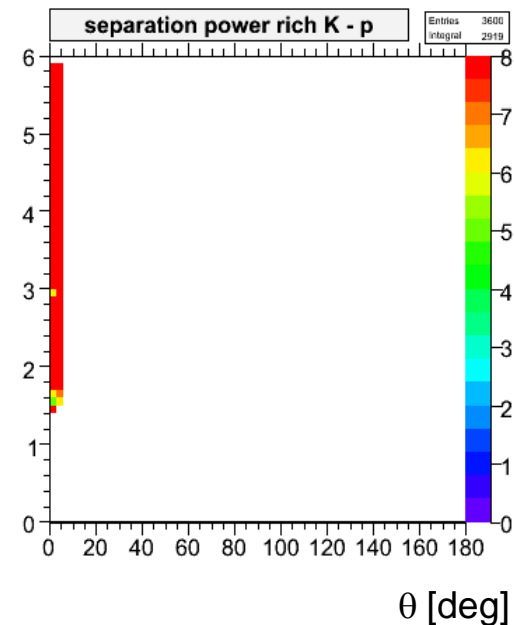
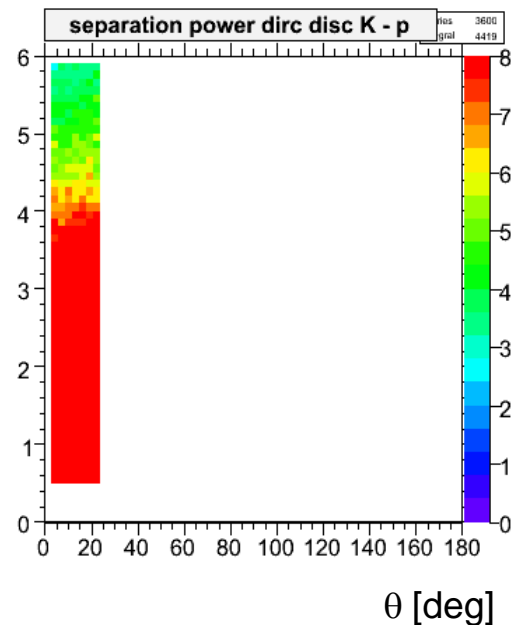
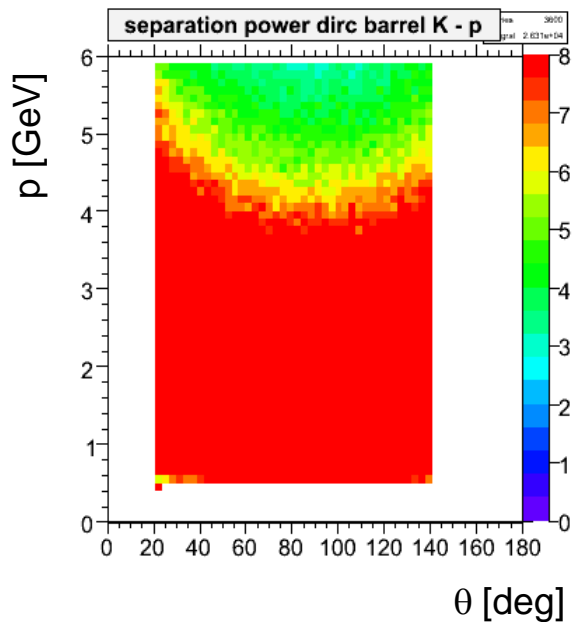




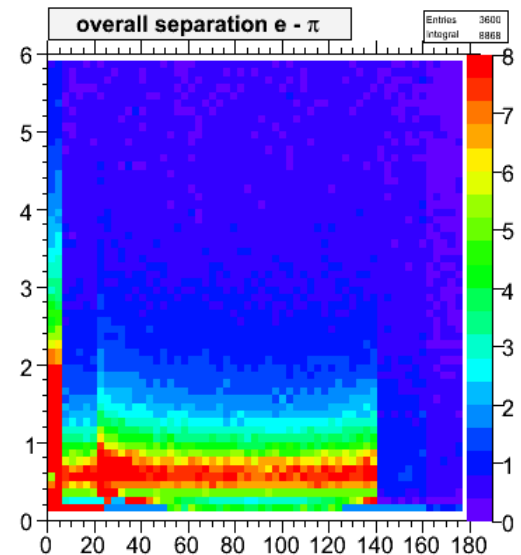
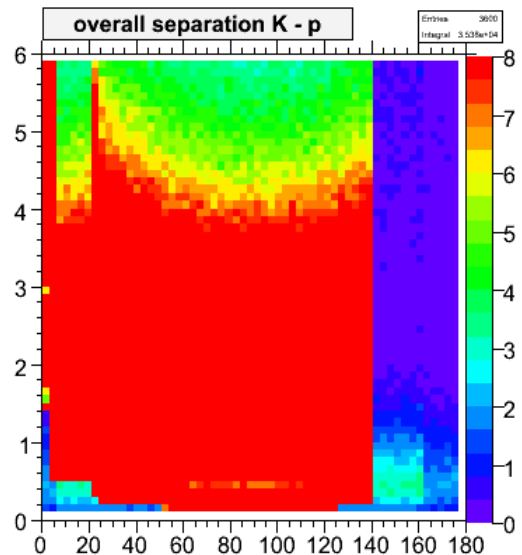
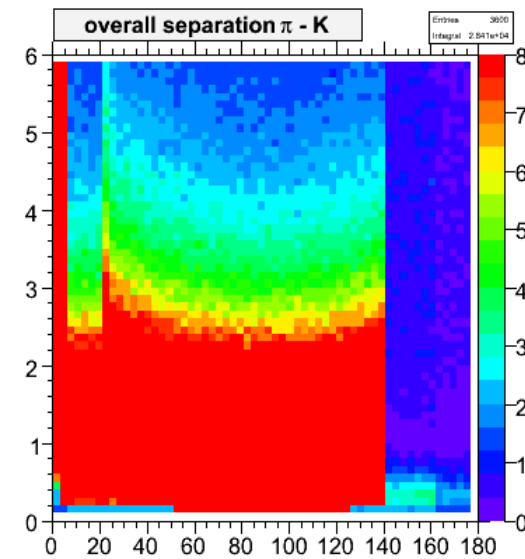
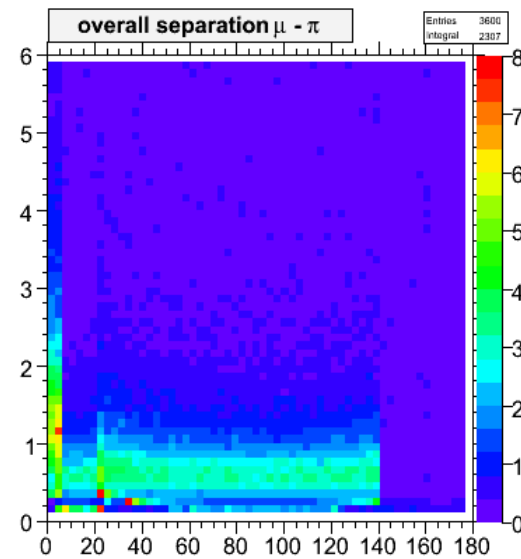
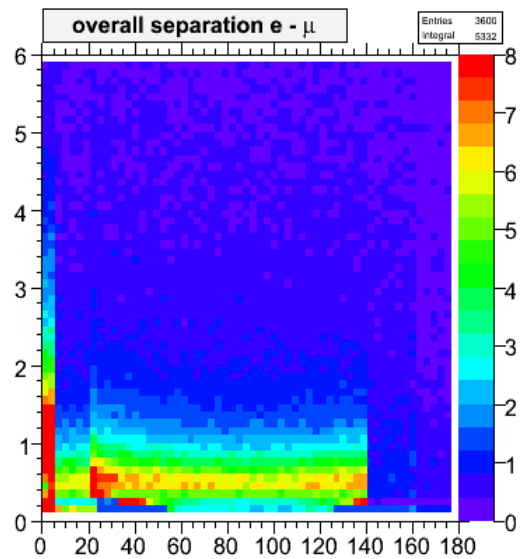
Separation mu - pi (STT)







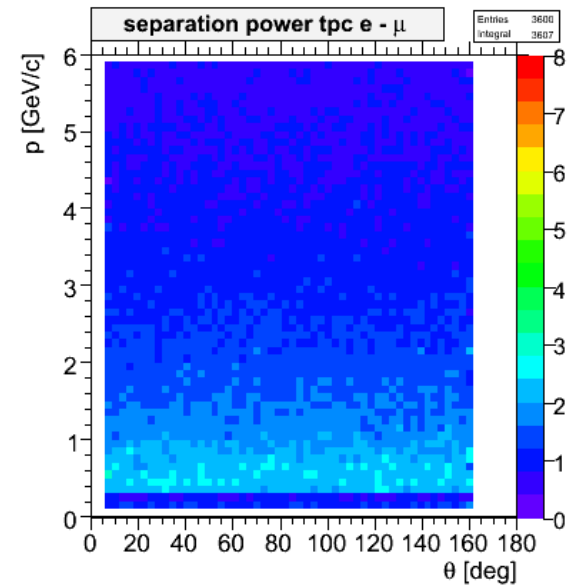
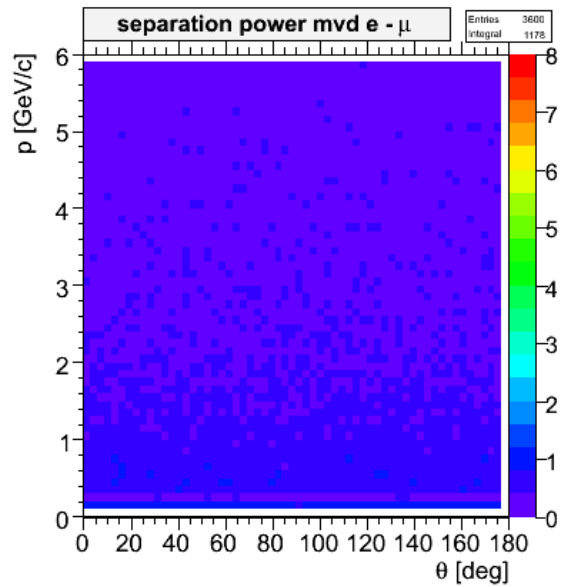
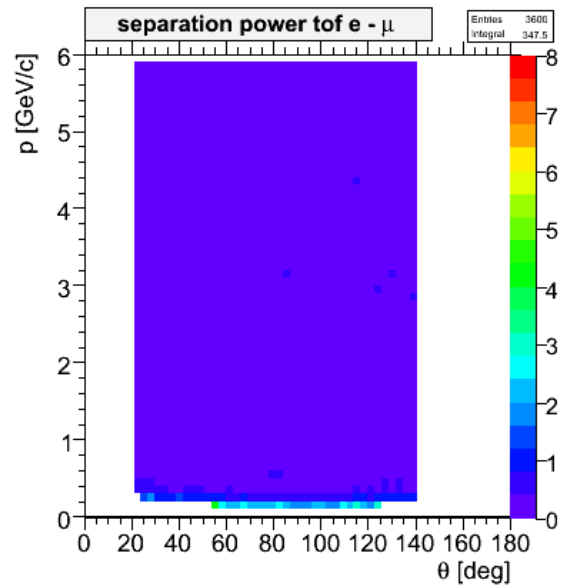
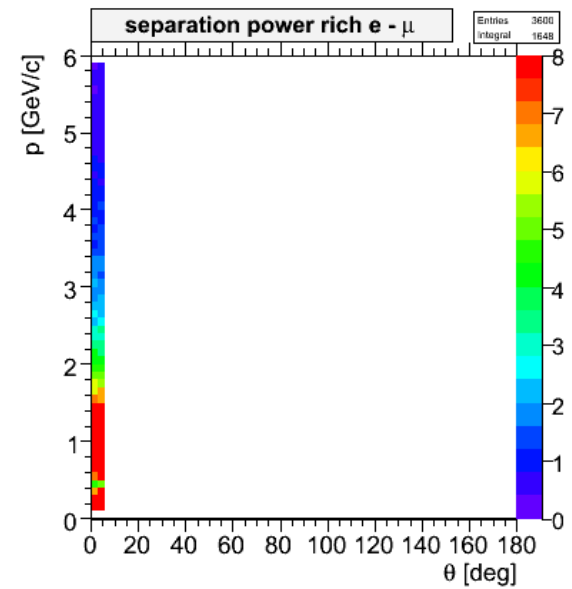
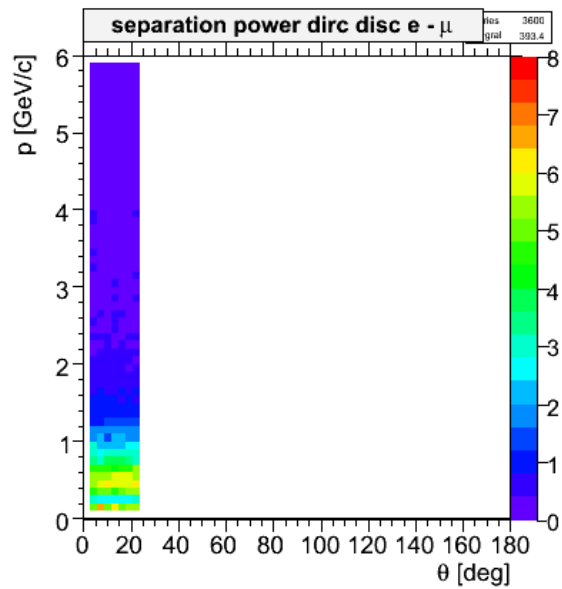
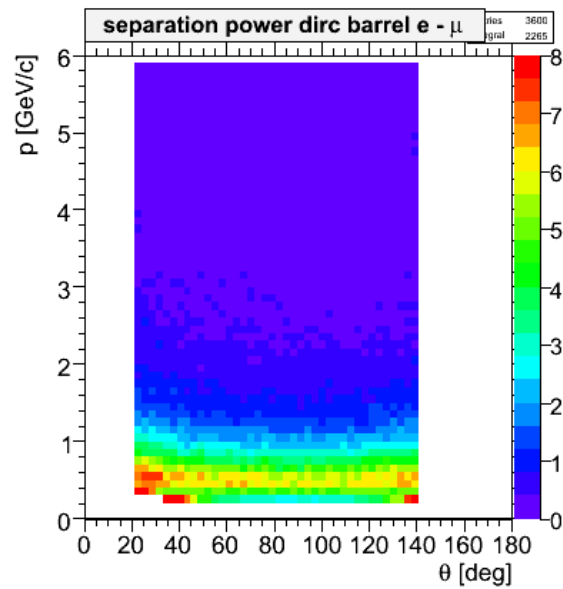
Overall performance (STT)



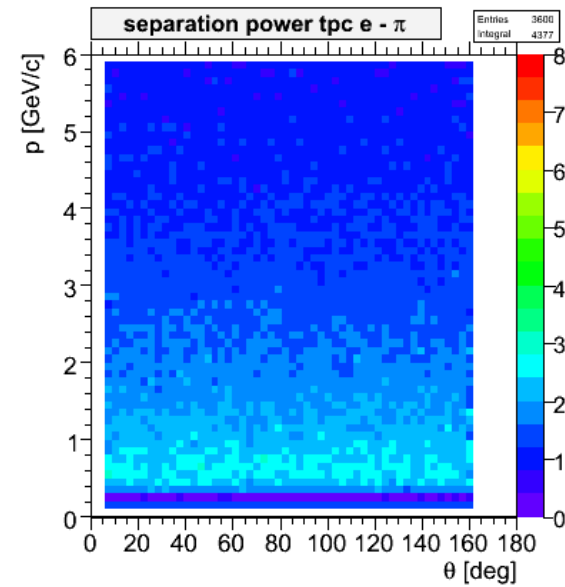
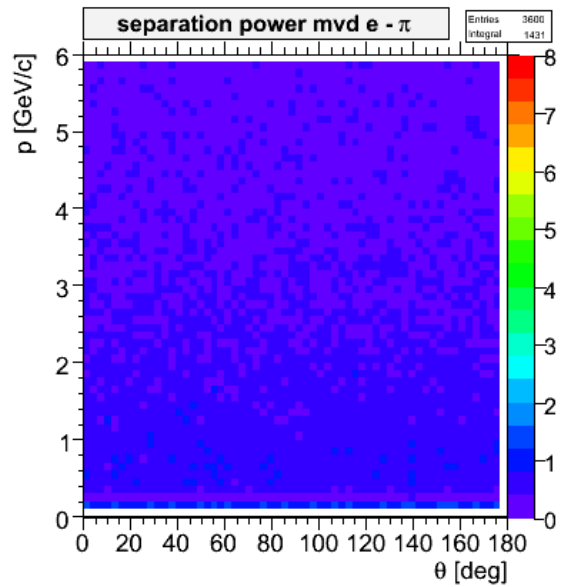
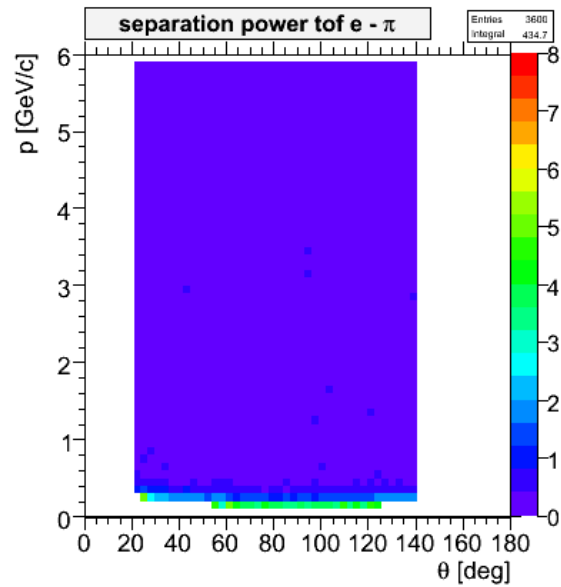
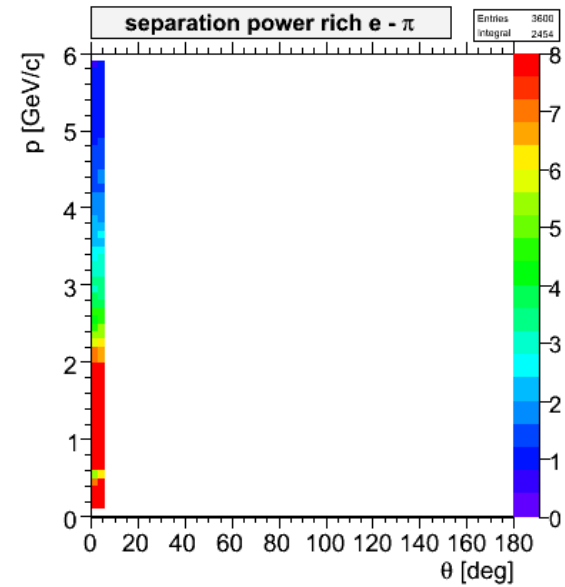
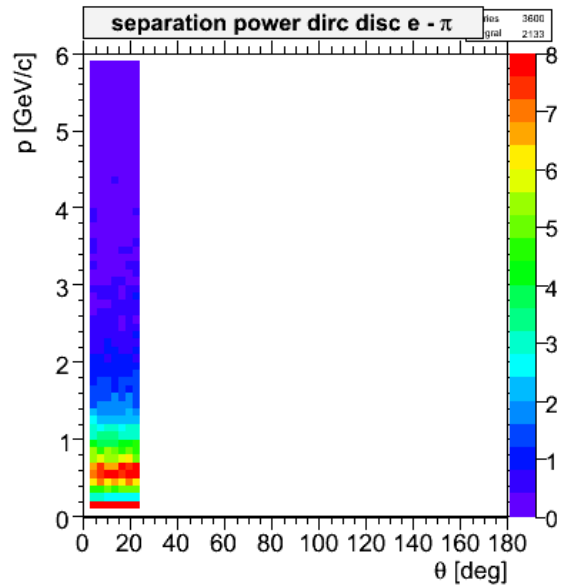
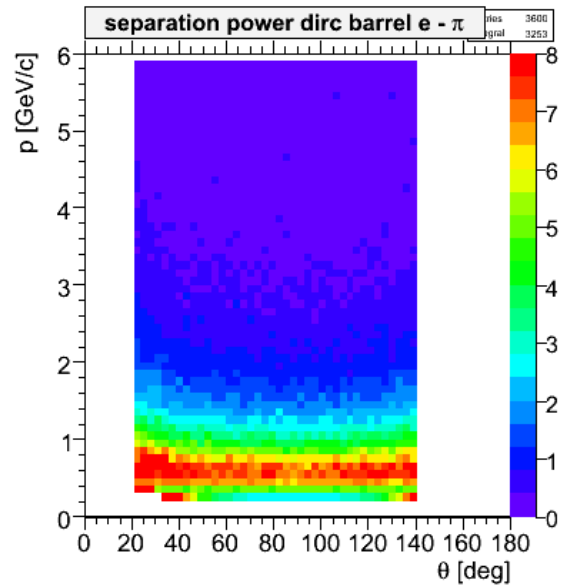
Combined n_{σ}
given by expression

$$n_{\sigma,tot} = \sqrt{\sum_i n_{\sigma,i}^2}$$

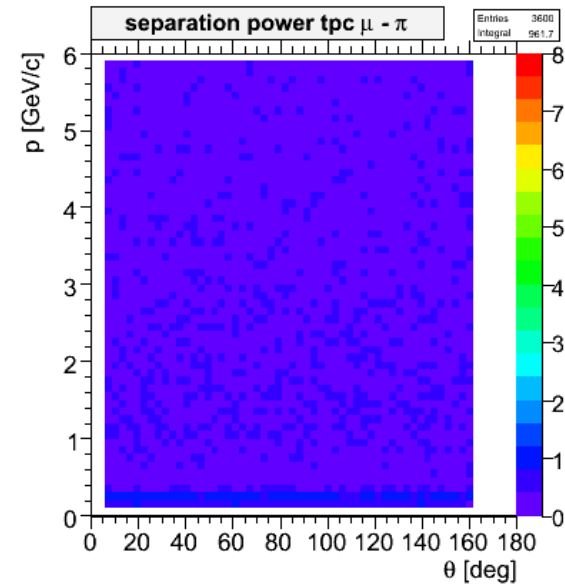
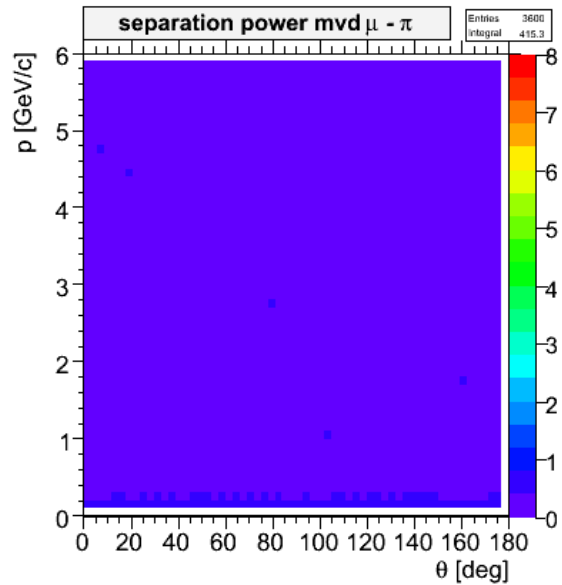
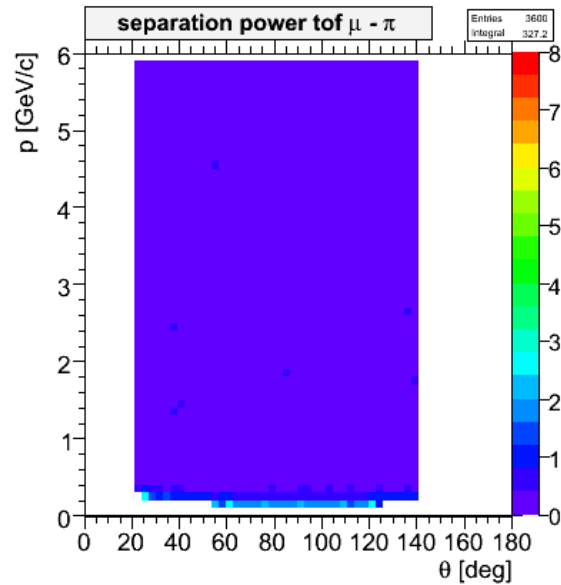
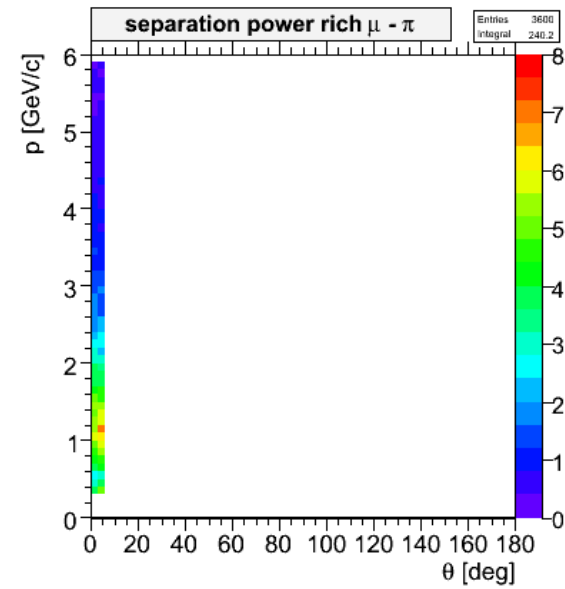
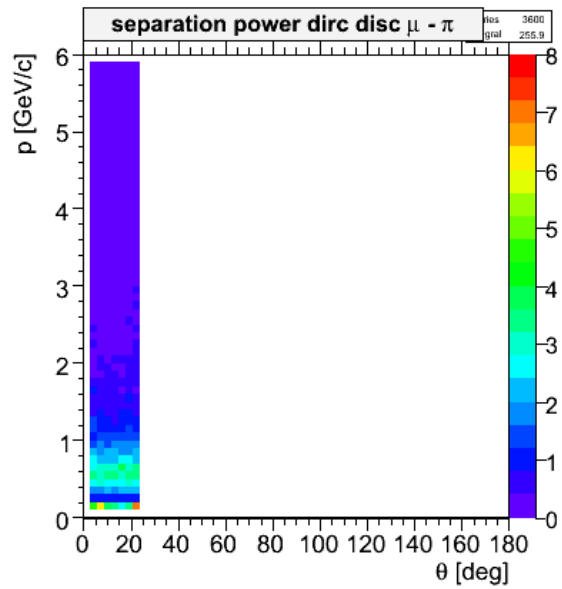
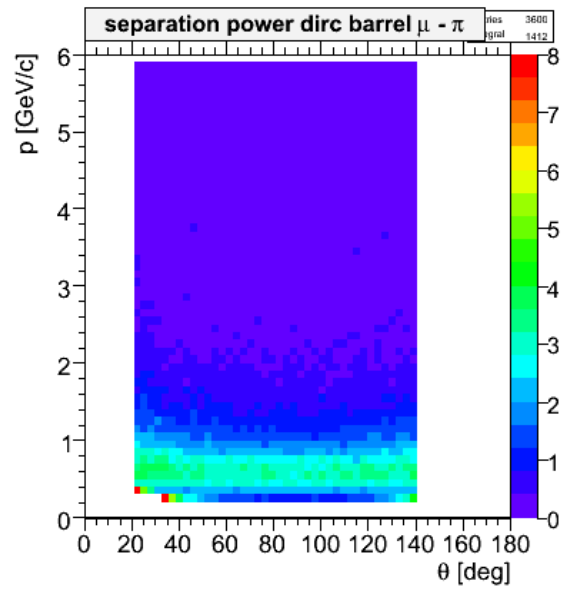
Separation e - mu (TPC)



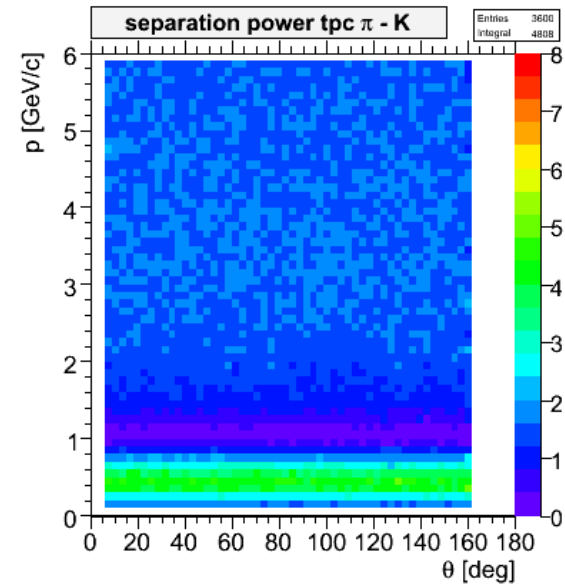
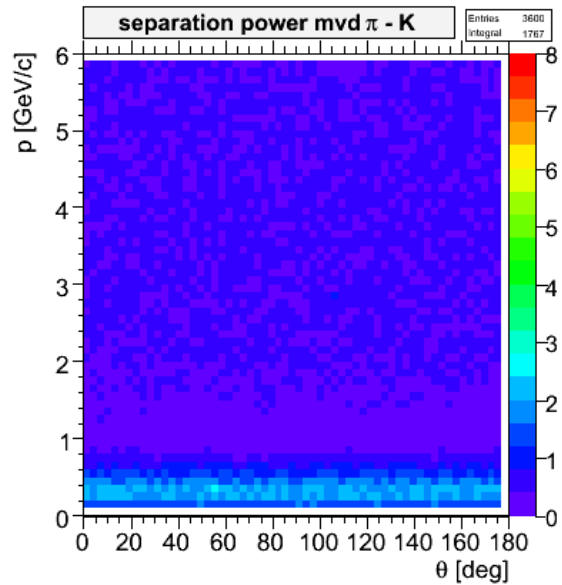
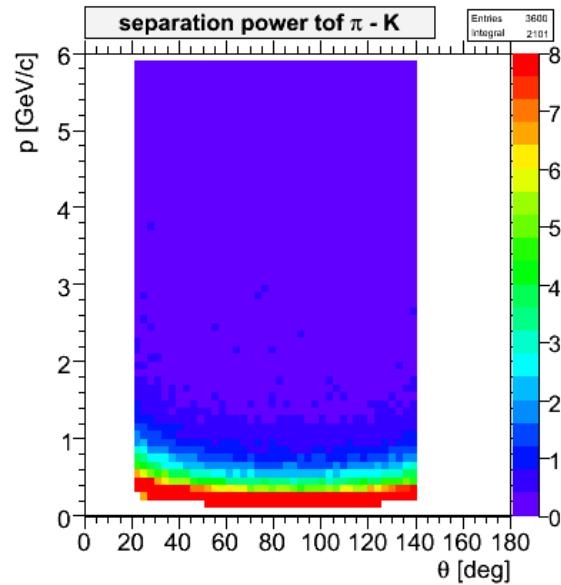
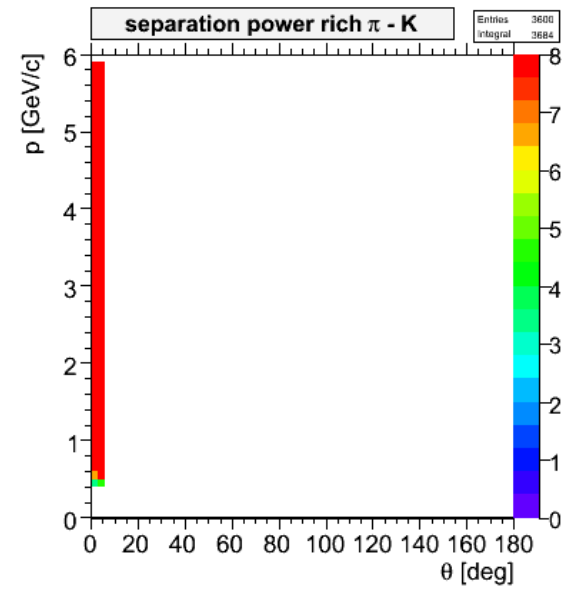
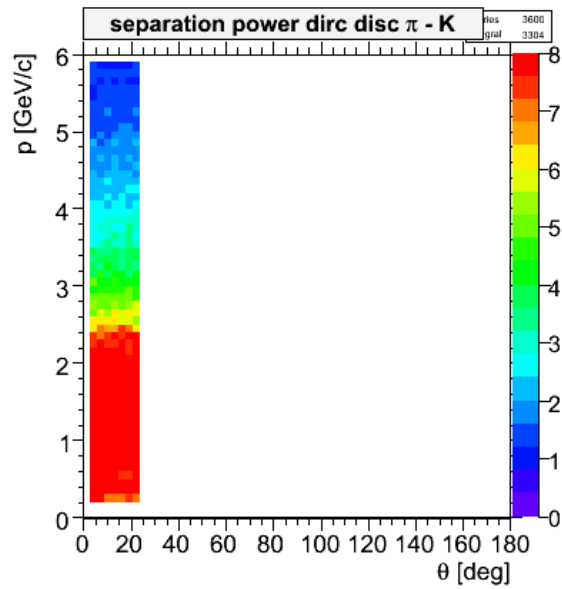
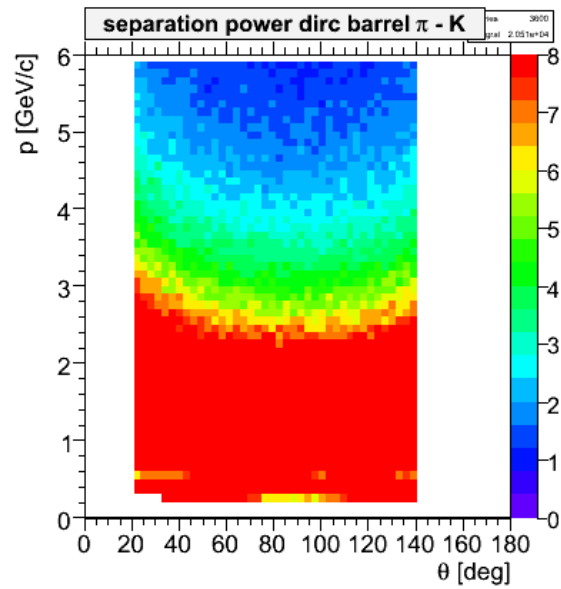
Separation e - pi (TPC)



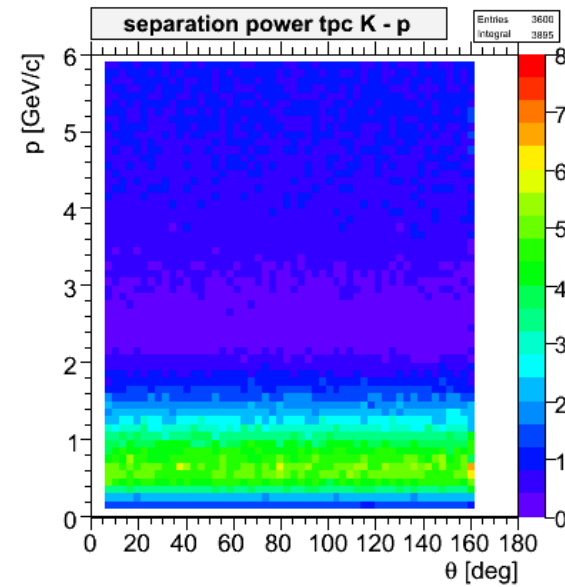
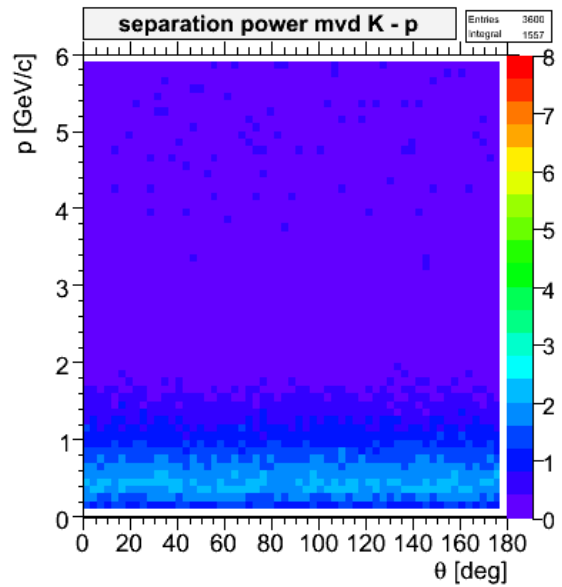
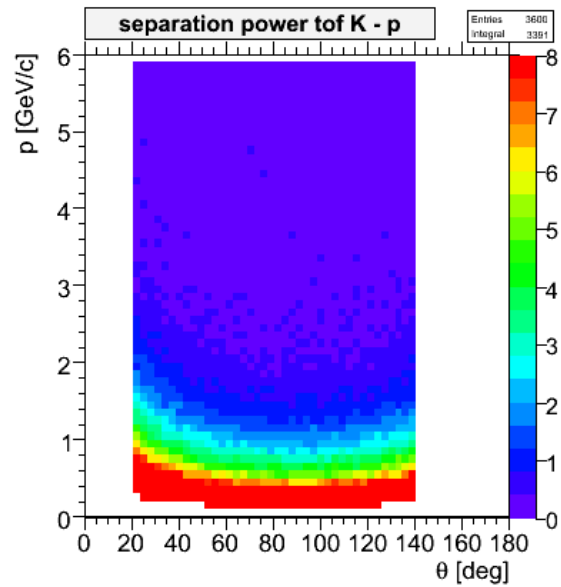
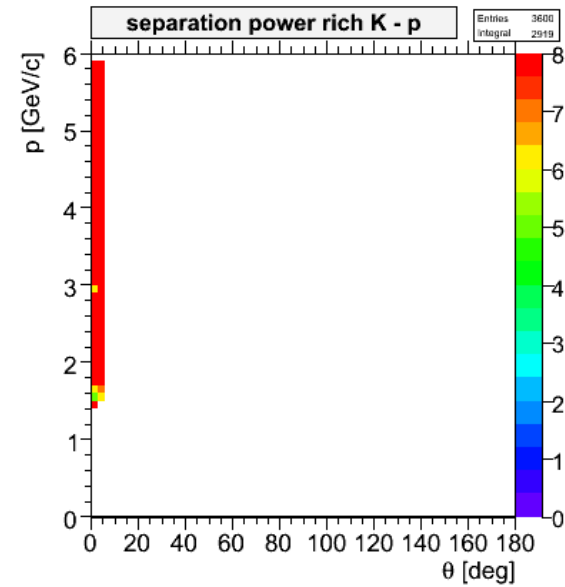
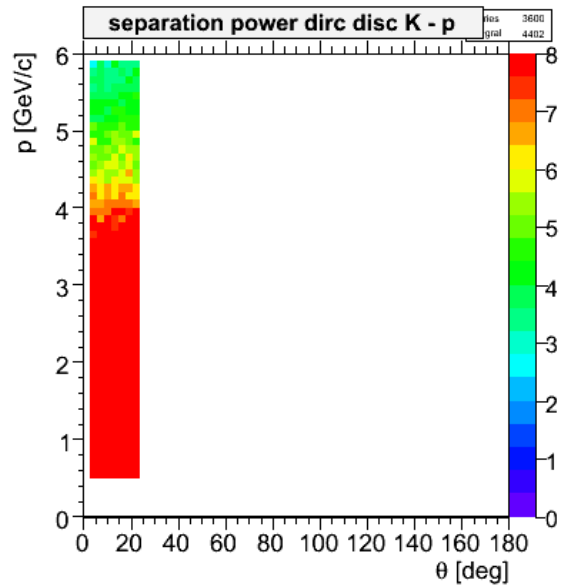
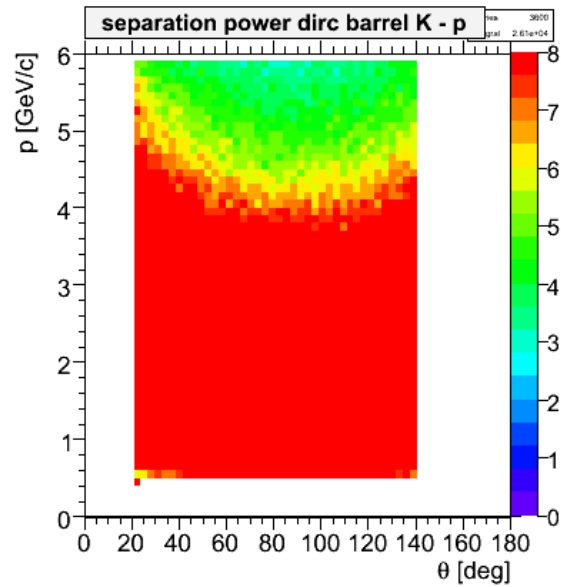
Separation mu - pi (TPC)



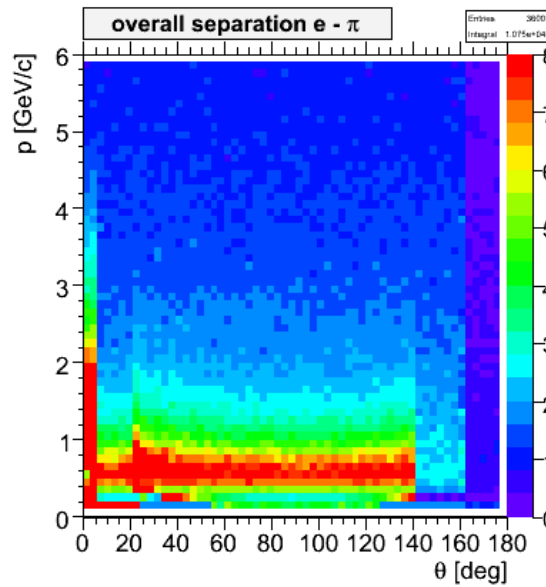
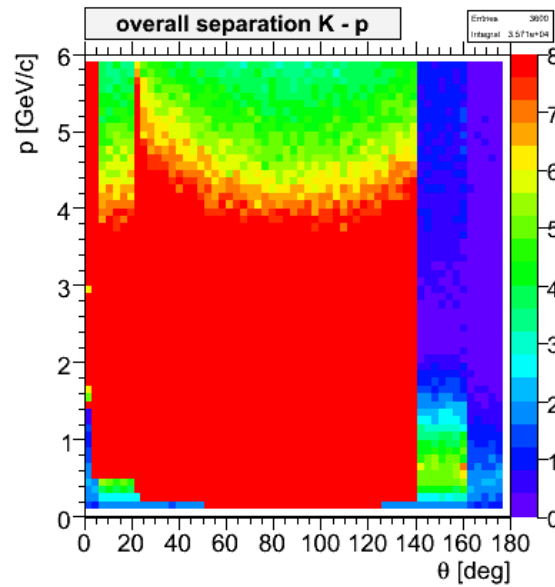
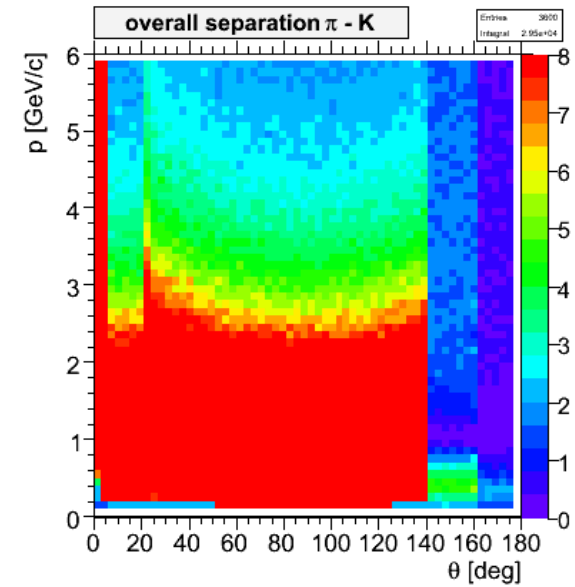
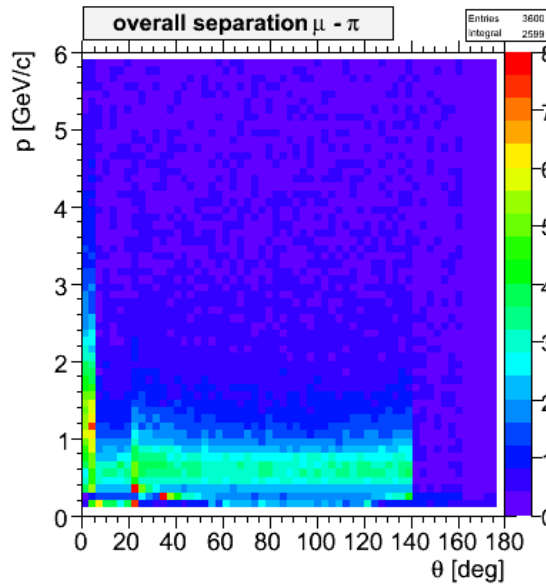
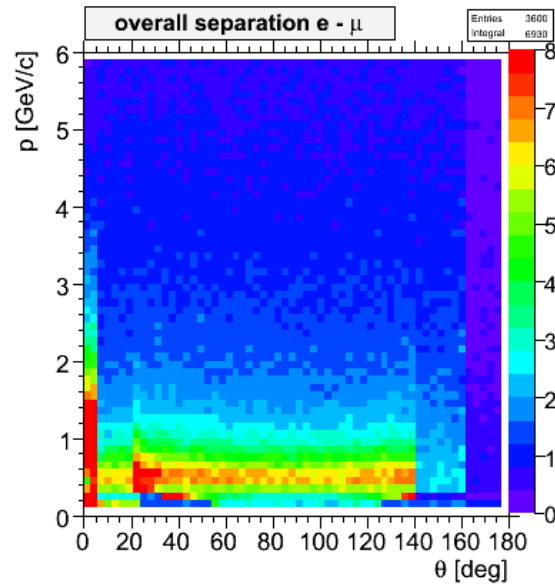
Separation pi - K (TPC)



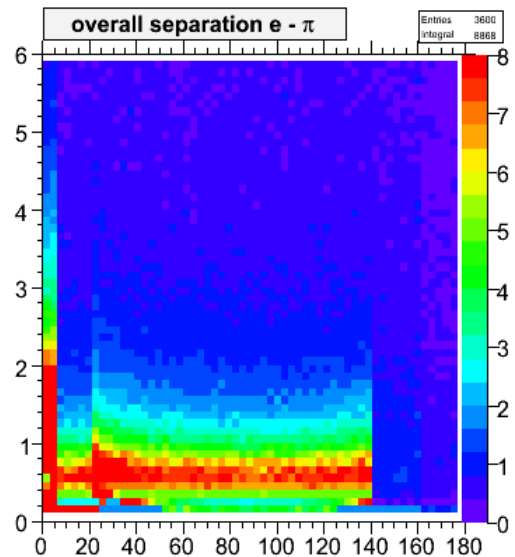
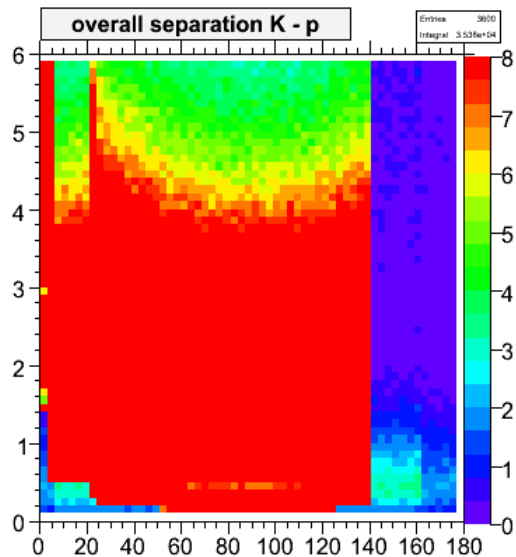
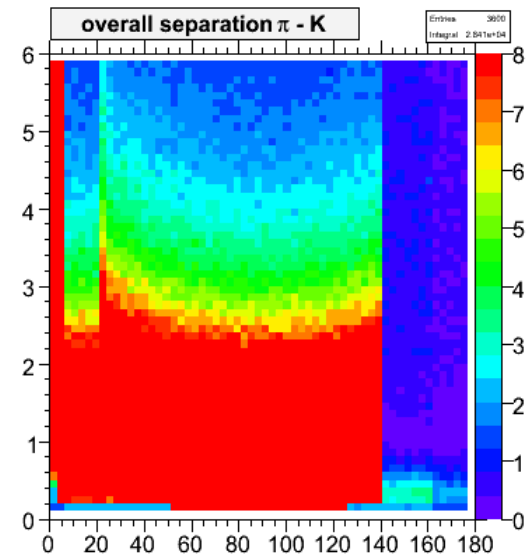
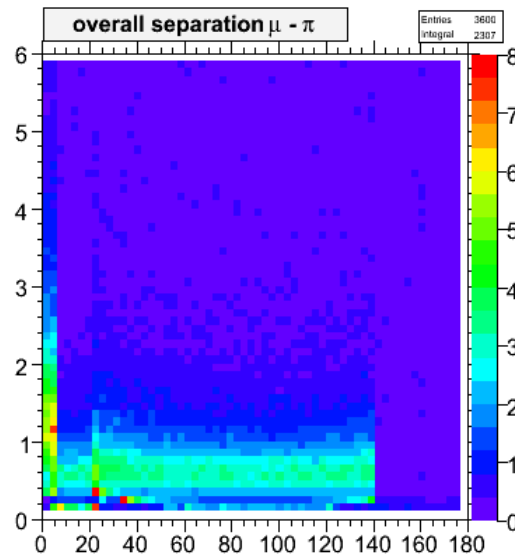
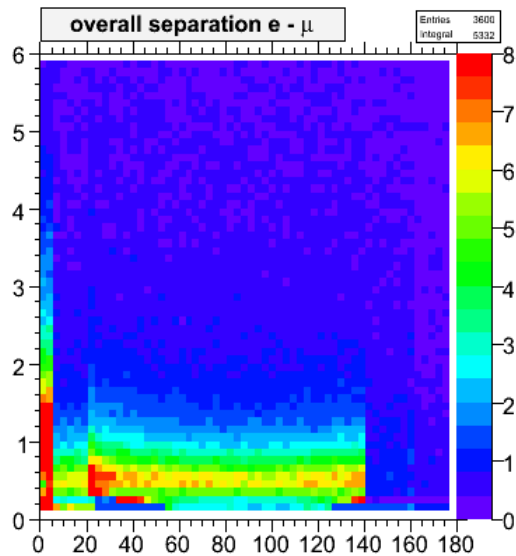
Separation K - p (TPC)



Overall performance (TPC)



Overall performance (STT) copy



Combined n_{σ}
given by expression

$$n_{\sigma,tot} = \sqrt{\sum_i n_{\sigma,i}^2}$$