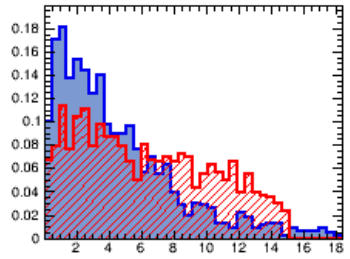
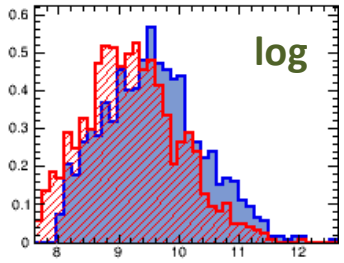
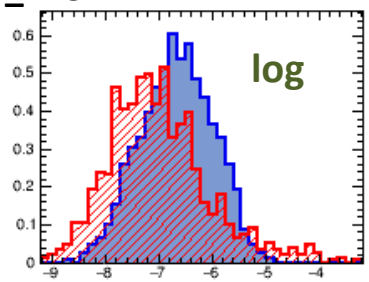
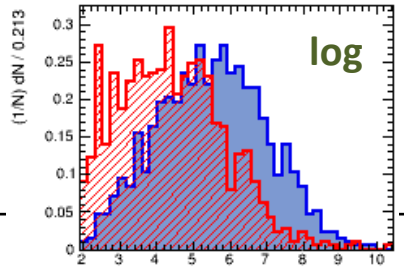
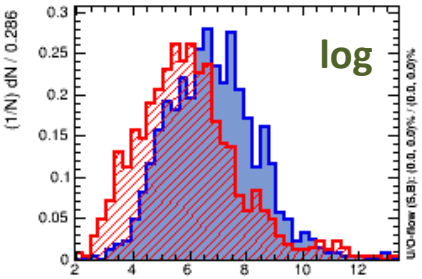
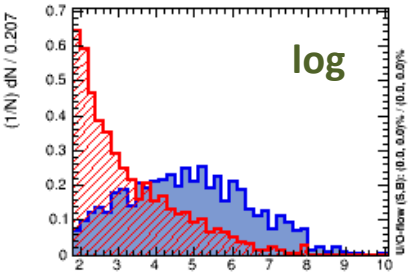
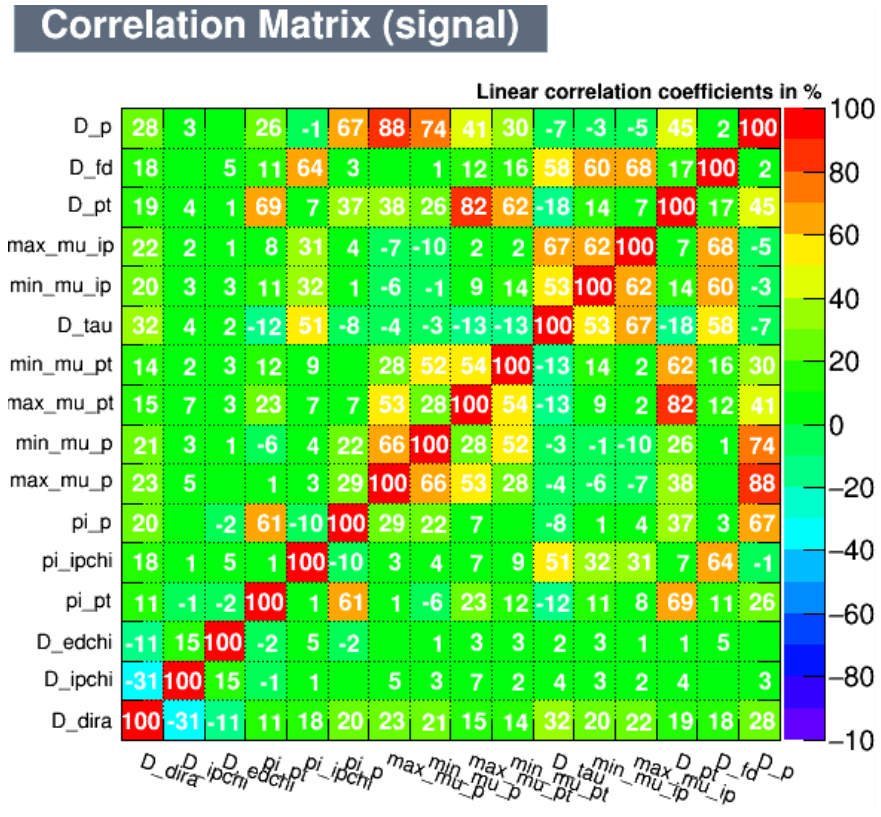
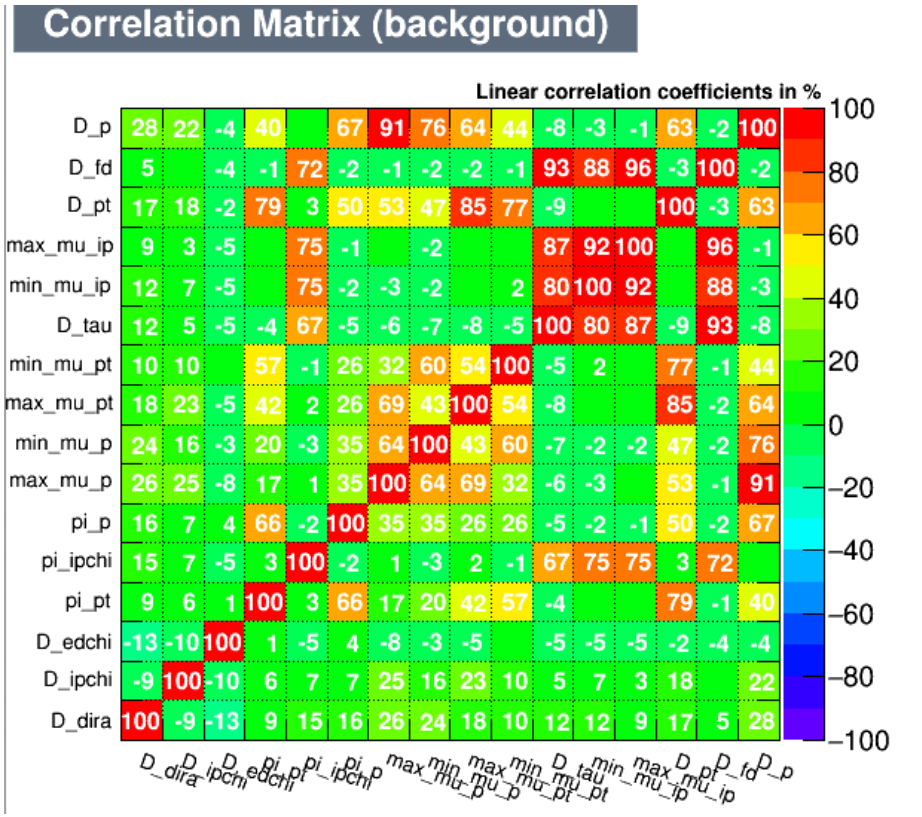
D→PiMuMu

- Input variables for BDT [Ed's thesis]:

D_DIRA_OWNPV	D_IPCHI2_OWNPV	D_P	piplus_PT
max(muminus_P, muplus_P)	min(muminus_P, muplus_P)	max(muminus_PT, muplus_PT)	min(muminus_PT, muplus_PT)
D_ENDVERTEX_CHI2 	piplus_P 	D_TAU 	D_PT
min(muminus_IPCHI2_OWNPV, muplus_IPCHI2_OWNPV)	max(muminus_IPCHI2_OWNPV, muplus_IPCHI2_OWNPV) 	D_FDCHI2_OWNPV 	piplus_IPCHI2_OWNPV 

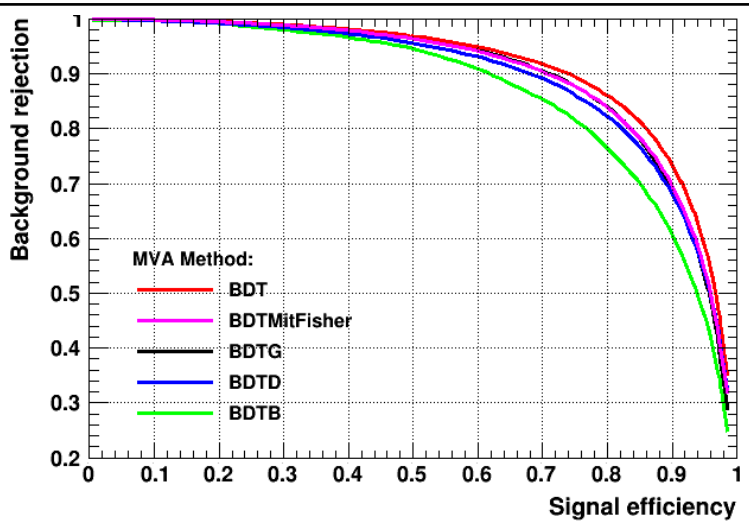
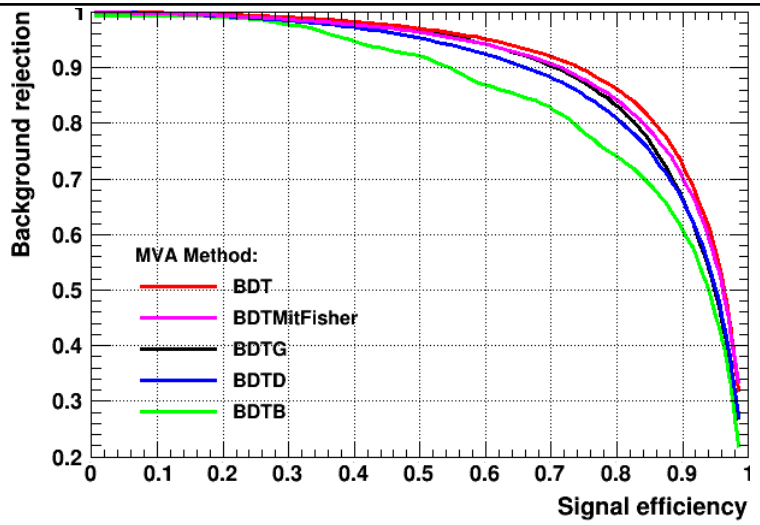
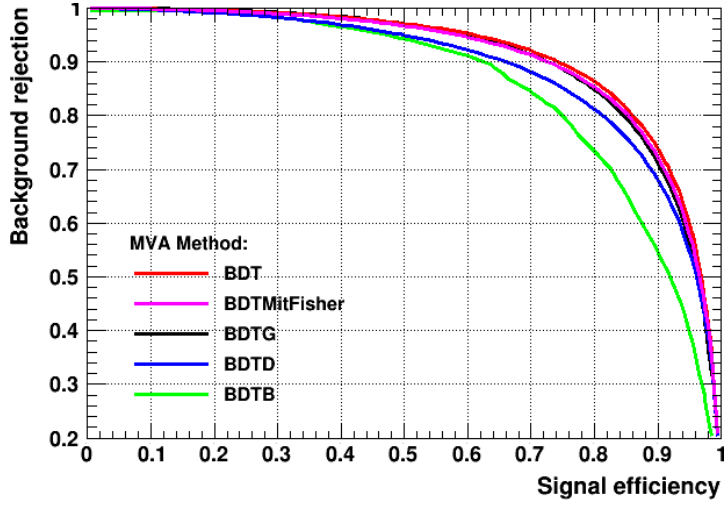
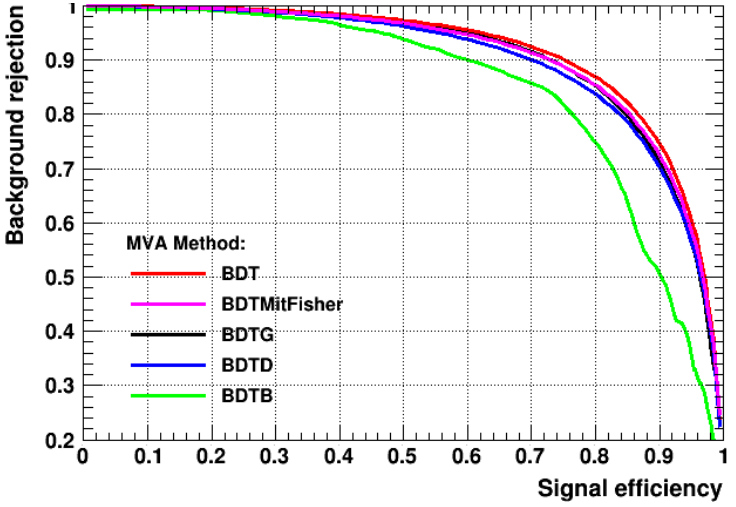
Input Variable Linear Correlation Coefficients



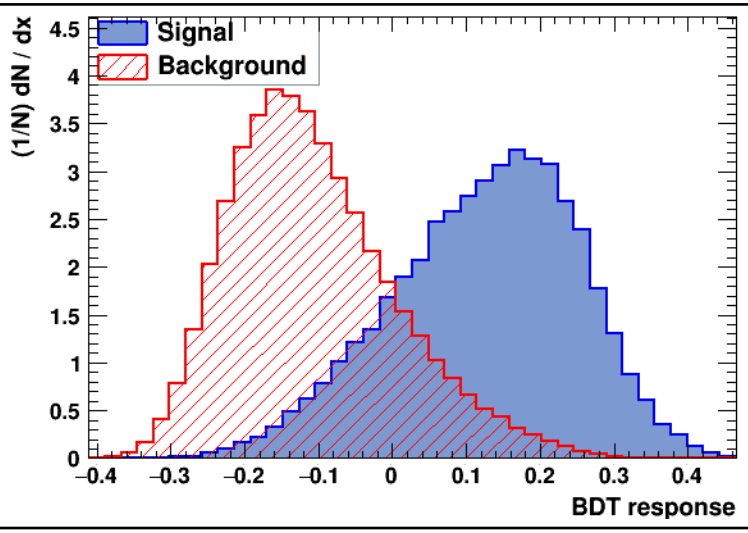
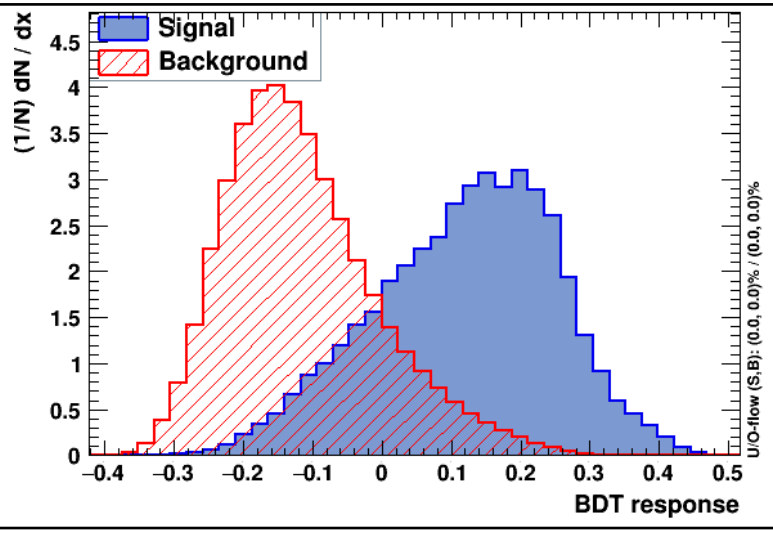
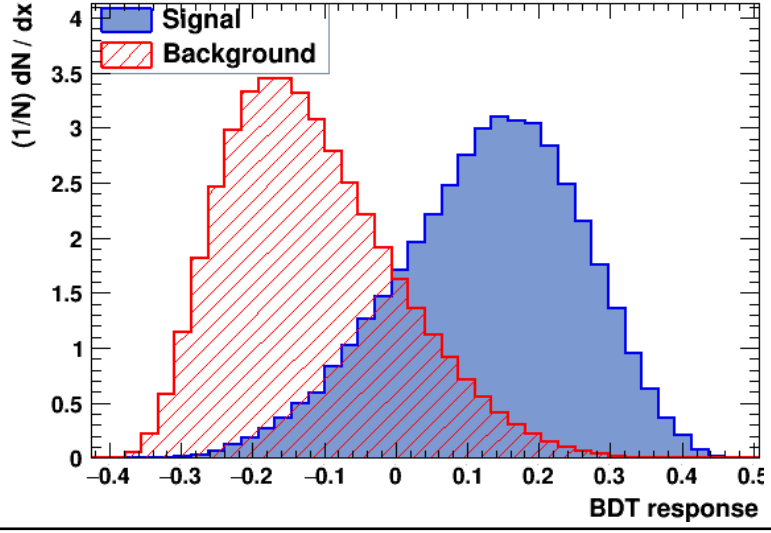
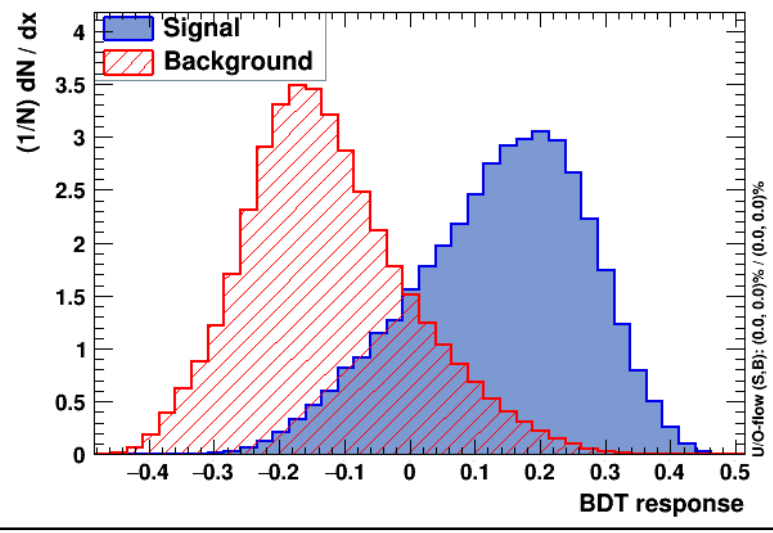


"TMVA_D2PiMuMu11_MagDown.root"

Background rejection versus Signal efficiency

	Magnet Up	Magnet Down
2011		
2012		

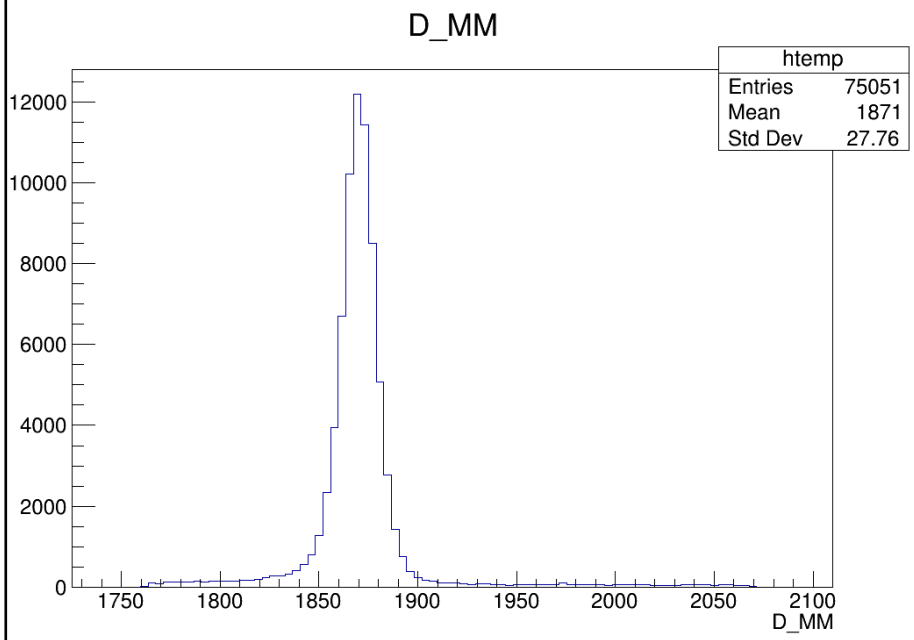
TMVA response for classifier: BDT

	Magnet Up	Magnet Down
2011		
2012		

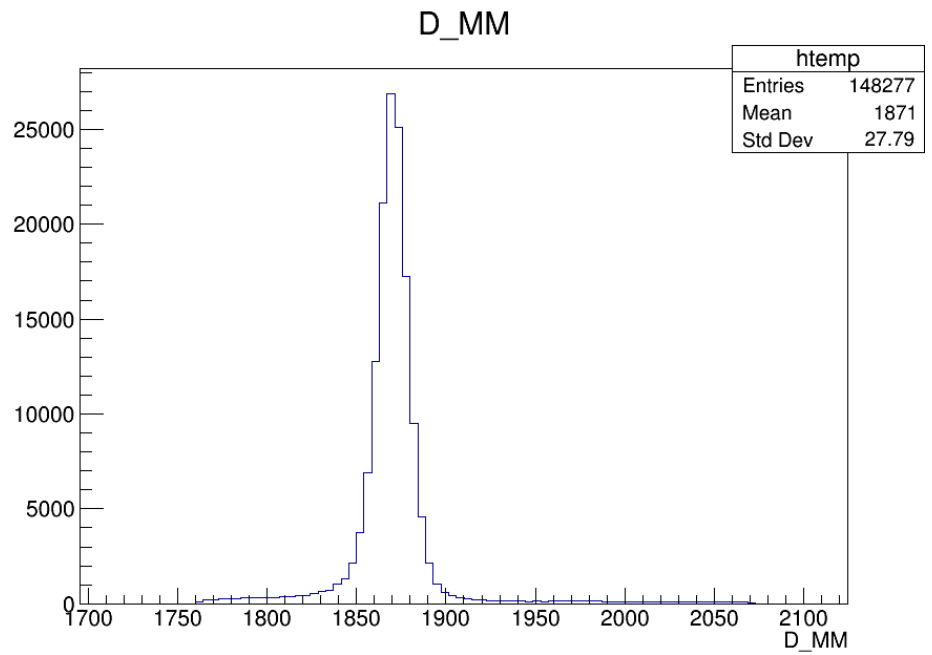
Variables for Fitting

- n and alpha from MC fit
- D(s) mass http://pdg.lbl.gov/2015/listings/rpp2015-list-D-plus-minus.pdf

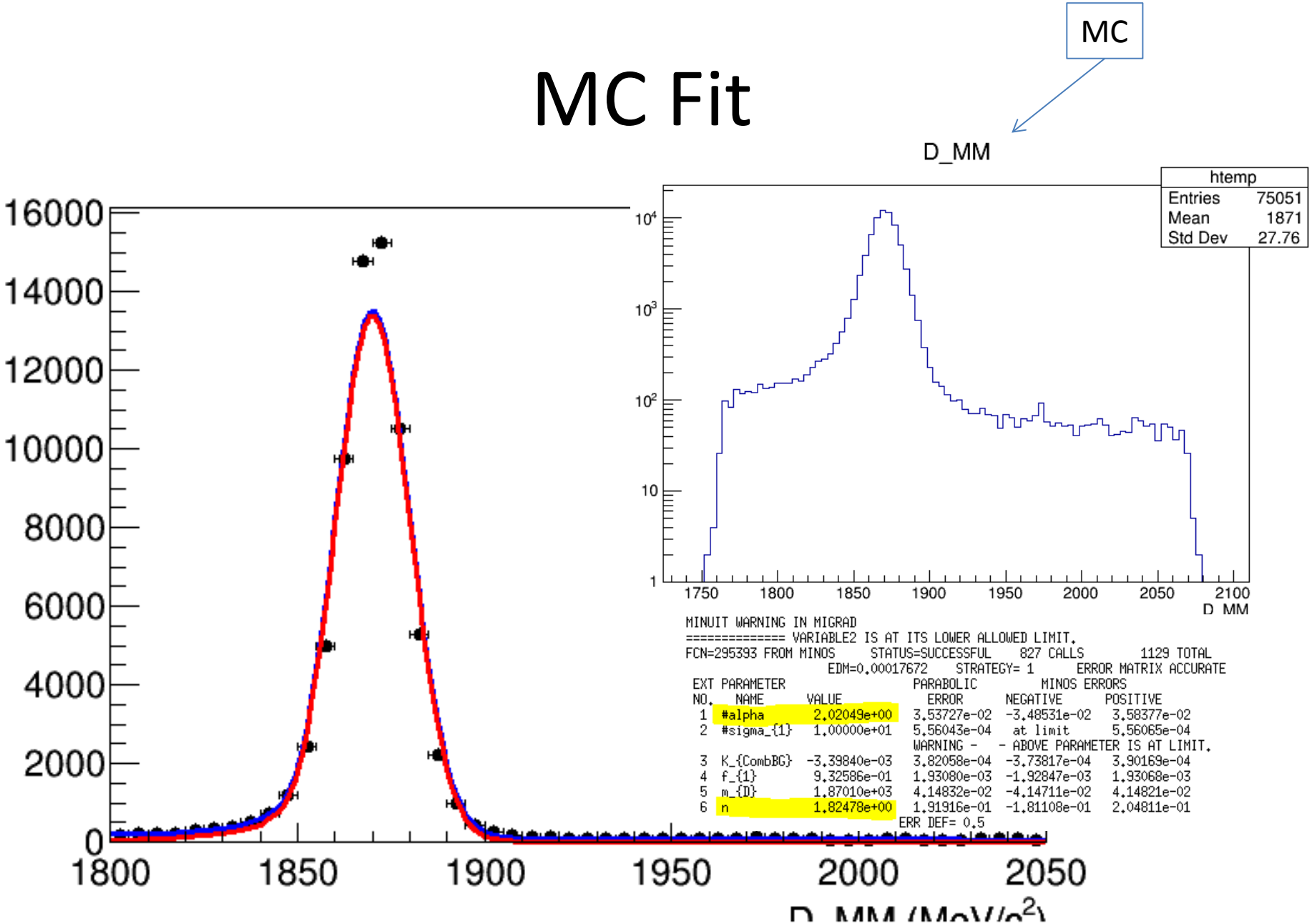
MC D2PiMuMu 2012_MagnetDown



MC D2PiMuMu 2012 MagnetUp



MC Fit


MC
D_MM
htemp
Entries 75051
Mean 1871
Std Dev 27.76
D_MM
MINUIT WARNING IN MIGRAD
============== VARIABLE2 IS AT ITS LOWER ALLOWED LIMIT.
FCN=295393 FROM MINOS STATUS=SUCCESSFUL 827 CALLS 1129 TOTAL
EDM=0.00017672 STRATEGY= 1 ERROR MATRIX ACCURATE
EXT PARAMETER PARABOLIC MINOS ERRORS
NO. NAME VALUE ERROR NEGATIVE POSITIVE
1 #alpha 2.02049e+00 3.53727e-02 -3.48531e-02 3.58377e-02
2 #sigma_{1} 1.00000e+01 5.56043e-04 at limit 5.56065e-04
WARNING - - ABOVE PARAMETER IS AT LIMIT.
3 K_{CombBG} -3.39840e-03 3.82058e-04 -3.73817e-04 3.90169e-04
4 f_{1} 9.32586e-01 1.93080e-03 -1.92847e-03 1.93068e-03
5 m_{D} 1.87010e+03 4.14832e-02 -4.14711e-02 4.14821e-02
6 n 1.82478e+00 1.91916e-01 -1.81108e-01 2.04811e-01
ERR DEF= 0.5
D_MM (MeV/c²)

Double Crystal Ball Fit

- The Crystal ball function is a Gaussian with a tail on the low side
- The first fit:
- Cuts: