



Advanced RooFit

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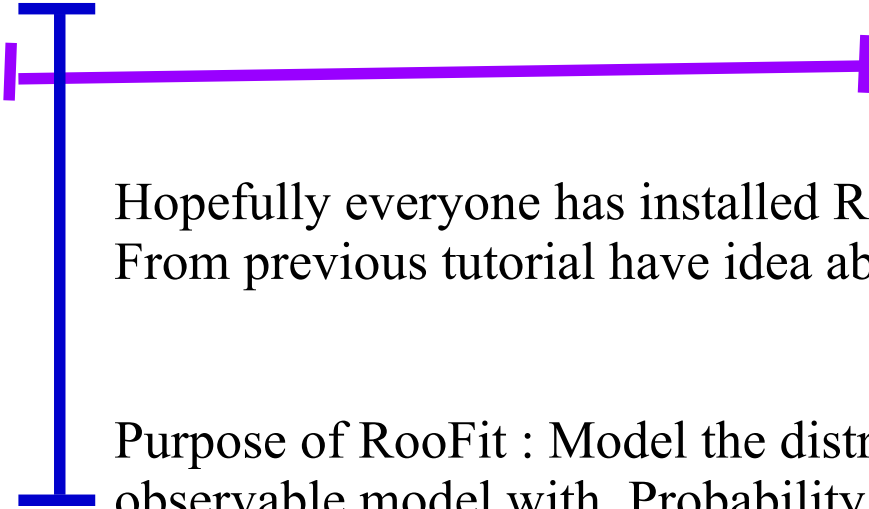
POST-CKM School
TIFR





Topic to be covered :

- 2d RooFit
- Simultaneous Fit
- Toy generation , Fit the toys
- Exercises

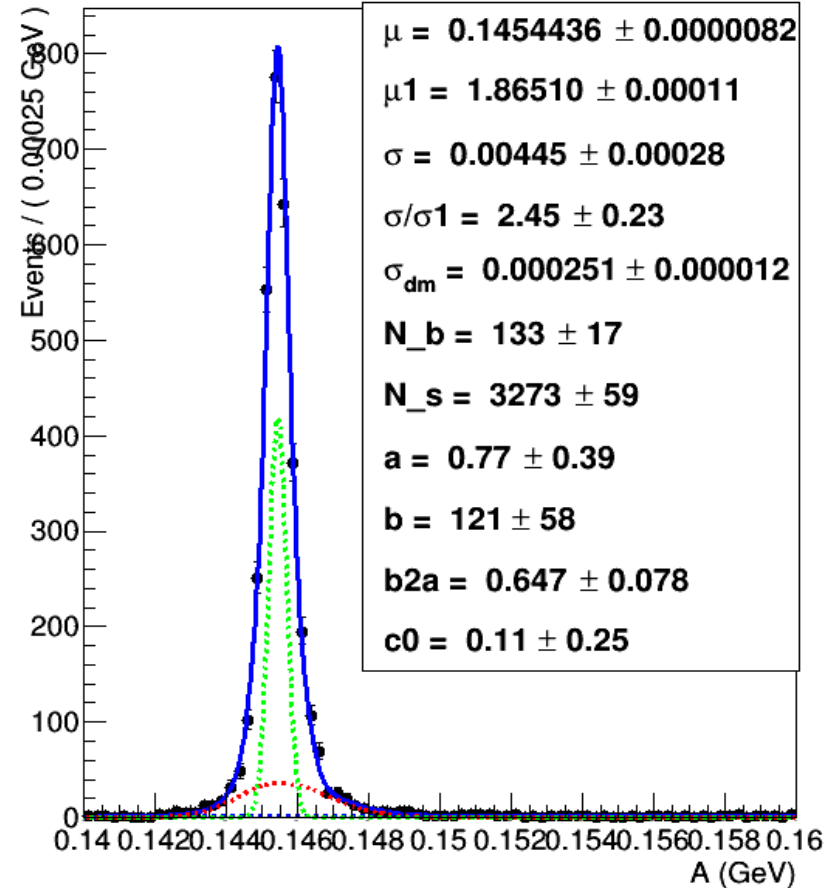
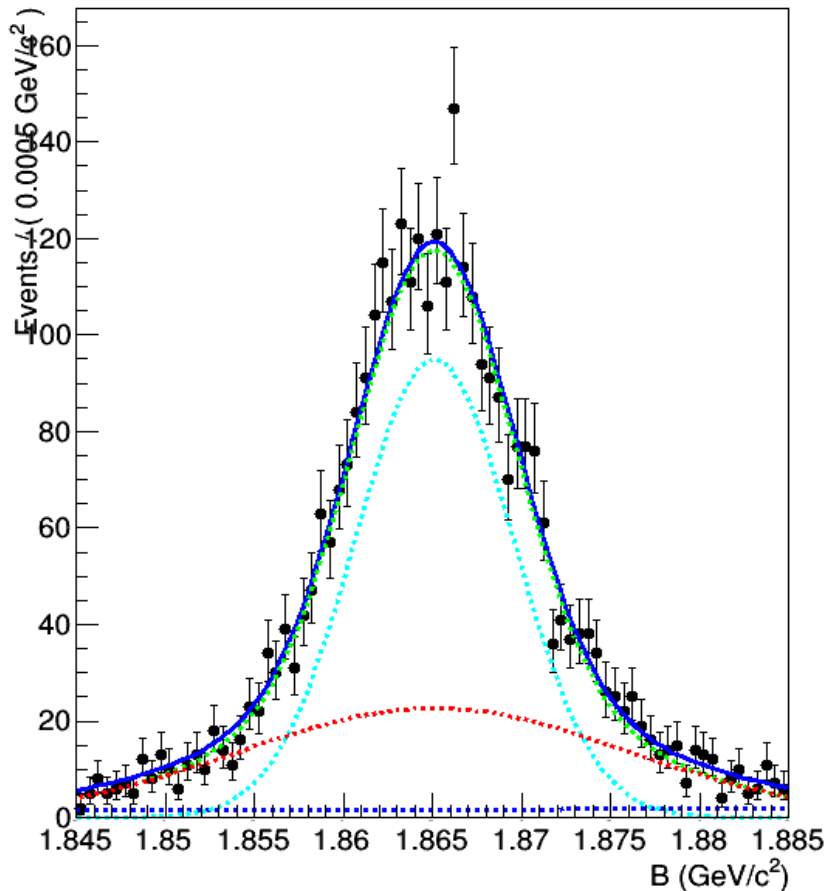


Hopefully everyone has installed ROOT and RooFit
From previous tutorial have idea about ROOT and 1d RooFit.
(See Varghese and Prasant Talks)

Purpose of RooFit : Model the distribution of observables/variables
observable model with Probability density function $F(x;y)$ normalized over allowed
range of the observables

STEPS:

- Read input data
- Define PDFs
- Fit PDFs to data
- See the fitted results

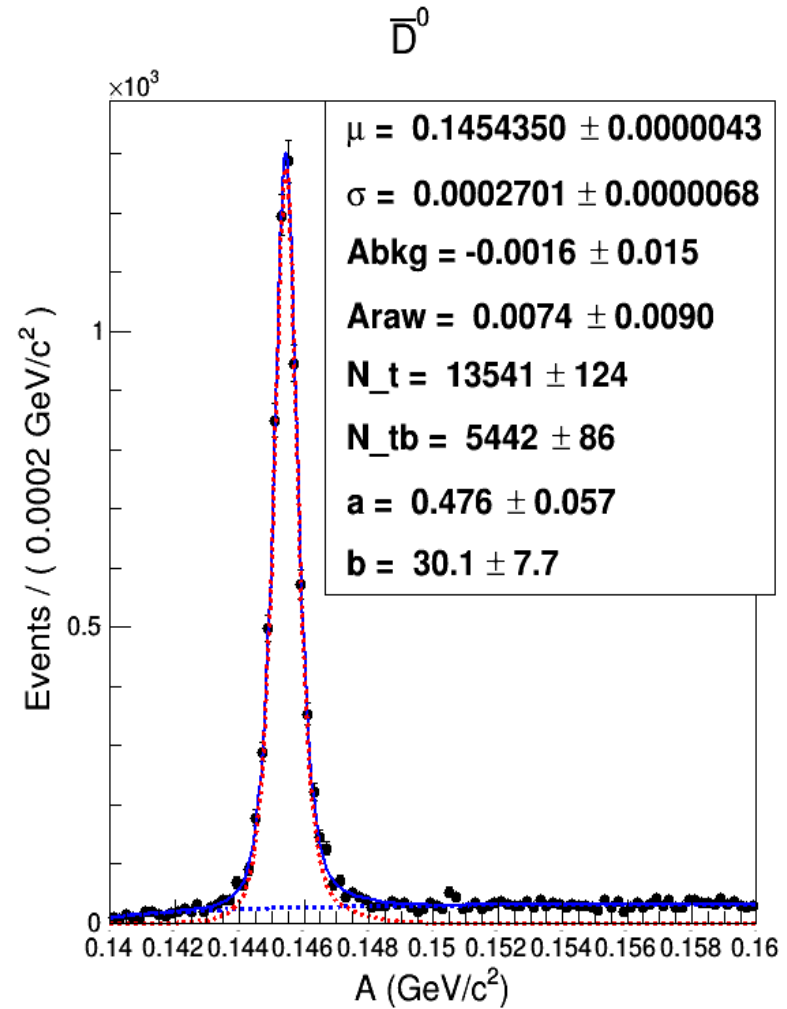
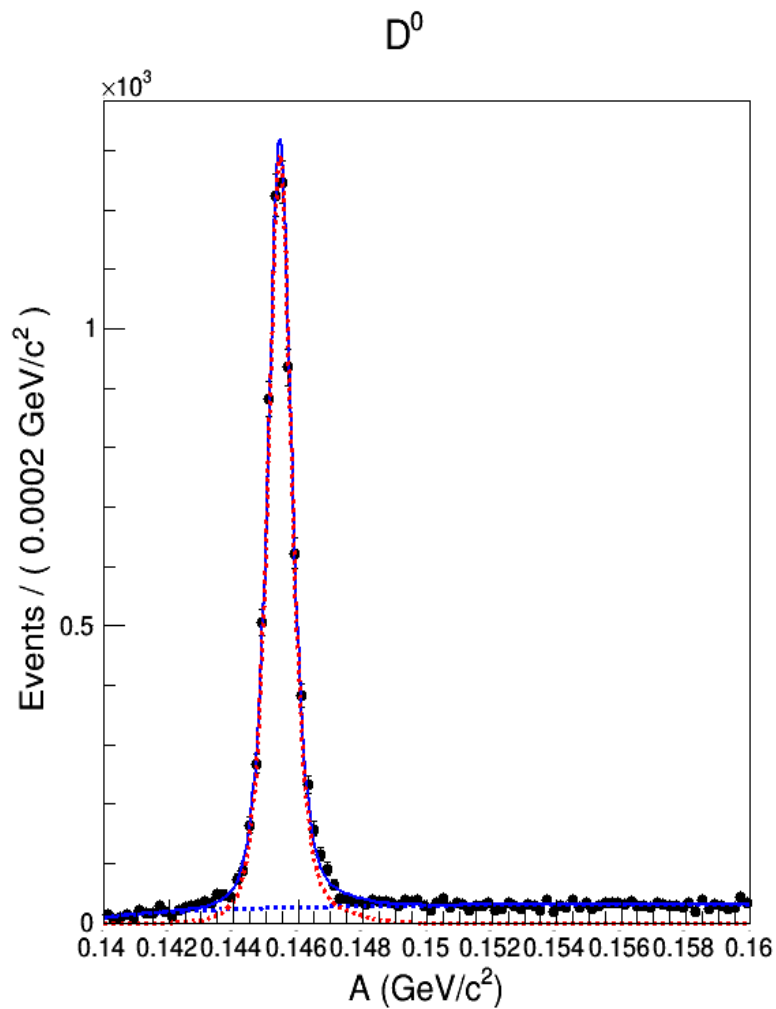


STATUS=CONVERGED or STATUS=OK in the output or $\chi^2 \leq 1$, this is a good sign !!

```

COVARIANCE MATRIX CALCULATED SUCCESSFULLY
FCN=-56673 FROM HESSE      STATUS=OK      100 CALLS      1052 TOTAL
                        EDM=3.08225e-06  STRATEGY= 1  ERROR MATRIX ACCURATE
EXT PARAMETER              INTERNAL              INTERNAL
  
```

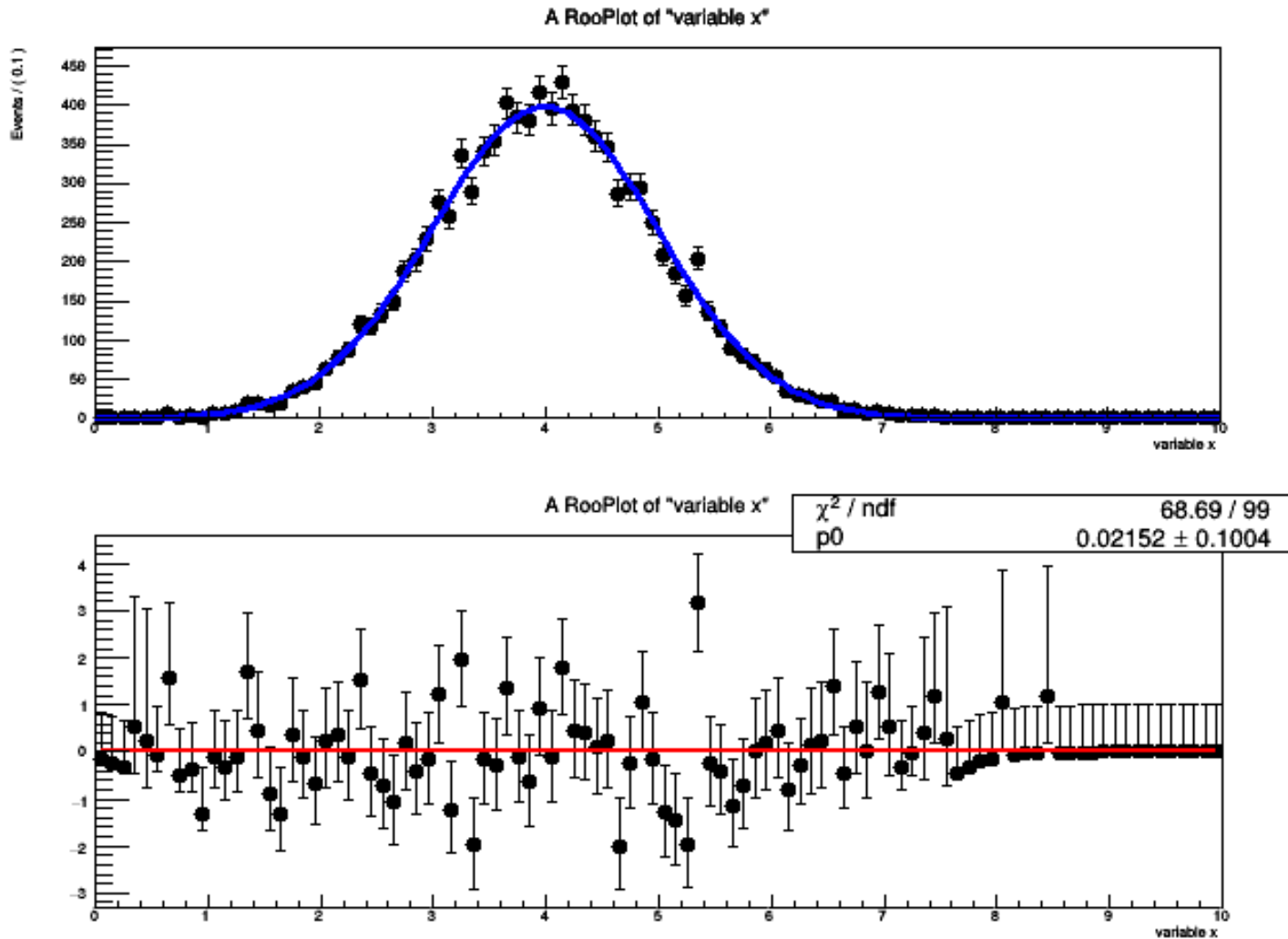
➤ Simultaneous Fit



```

*****
FCN=-237379 FROM MINOS      STATUS=SUCCESSFUL    694 CALLS      1047 TOTAL
                        EDM=7.49851e-05    STRATEGY= 1      ERROR MATRIX ACCURATE
    
```

TOYMC generation, Fitting the generated events , pull





➤ Exercises

- From RooFit_Basic talk's , You might have fitted m_{D^0} !!
Do the 2d RooFit of m_{D^0} and Δt_{D^0}
- Using the PDF of above (any) fit generate toymc and fit them

Install RooFit in your machine

If you have already installed RooFit along with root, check if it works!

Go to Root by typing "**root -l**" in terminal

type "**using namespace RooFit**"

If it doesn't work, you can install RooFit by

"**./configure --enable-roofit**" in root directory.

next-"**make**".

After successful installation, again check "**using namespace RooFit**" in terminal.