

Status around the fitting code

- recently, taking over and starting to look the code
- the code (I am checking) is under higzz/calculate

09/19/2019

➤ Problem

Crash when fit vvjj result... (fit code copy from Zhang Kaili in HZZ project)

```
JUNE 2018
Please enter your option:
0.4.5
plot pictures and save results
fit results...
compiling ./src/shapeFit.cxx
compiling and linking shapeFit
Begin 240 workspace building
Makeing workspace for channel mzvj
primez_label=s,mzvj, 1st func=DSCB
primez_label=zz,mzvj, 1st func=DSCB
Info in <Minuit2>: Minuit2Minimizer::Minimize : Minimization did NOT converge, Edm is above max
primez_label=ww,mzvj, 1st func=DSCB
primez_label=tt,mzvj, 1st func=DSCB
primez_label=zy,mzvj, 1st func=keys
primez_label=b,mzvj, 1st func=keys

*** Break *** segmentation violation
```

KaiLi's suggetion : check the input configuration in fit function...

➤ Plan

- Get the jjvv results and reproduce LingTen's results
- Try to fix the crash based on Kali's fit code , maybe extract the HZZ part in our project...



Borrow a slide from Tao. The same error messages I got

Settings in “shapefit.h”

higzz/calculate/workspace/inc/shapeFit.h

“background”

“signal”

```
//      {"s", "data/new_zz/mmvvjj/sig.root"},  
//      {"zh", "data/new_zz/mmvvjj/ZH_bkg.root"}  
//    }  
// },  
    { "mzvj", 5, 1, 120, 140,  
      "data/new_zz/mzvj/new_mzvj_sm.root",  
      {"s", "zz", "ww", "tt", "zy"},  
      {  
        {"s", "data/new_zz/mzvj/new_mzvj_sig.root"},  
        {"zz", "data/new_zz/mzvj/new_mzvj_zz.root"},  
        {"ww", "data/new_zz/mzvj/new_mzvj_ww.root"},  
        {"tt", "data/new_zz/mzvj/new_mzvj_tt.root"},  
        {"zy", "data/new_zz/mzvj/new_mzvj_az.root"}  
      }  
    },  
  
    { "mzjv", 8, 1, 120, 140,  
      "data/new_zz/mzjv/new_mzjv_sm.root",  
      {"s", "zz", "ww", "tt", "zy", "bb", "cc", "gg"},  
      {  
        {"s", "data/new_zz/mzjv/new_mzjv_sig.root"},  
        {"zz", "data/new_zz/mzjv/new_mzjv_zz.root"},  
        {"ww", "data/new_zz/mzjv/new_mzjv_ww.root"},  
        {"tt", "data/new_zz/mzjv/new_mzjv_tt.root"},  
        {"zy", "data/new_zz/mzjv/new_mzjv_az.root"},  
        {"bb", "data/new_zz/mzjv/new_mzjv_bb.root"},  
        {"cc", "data/new_zz/mzjv/new_mzjv_cc.root"},  
        {"gg", "data/new_zz/mzjv/new_mzjv_gg.root"}  
      }  
    },  
  
    { "vvhbb", 2, 1, 60, 125,
```

ZZ*->vvjj

ZZ*->jjvv

[1mRooFit v3.60 -- Developed by Wouter Verkerke and David Kirkby[0m
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All rights reserved, please read <http://roofit.sourceforge.net/license.txt>

Makeing workspace for channel mzvj
minimize Finished
status:0

RooFitResult: minimized FCN value: -27.4109, estimated distance to minimum: 2.05813e-05
covariance matrix quality: Full, accurate covariance matrix
Status : MINIMIZE=0

Floating Parameter	InitialValue	FinalValue +/-	Error	GblCorr.
mRes	1.0000e+00	4.7876e-01 +/-	7.66e-02	<none>
ratio	9.0000e-01	8.3165e-01 +/-	2.15e-01	<none>
sigL	3.0000e+00	2.4062e-01 +/-	3.62e-01	<none>
sigR	3.0000e+00	3.4883e+00 +/-	2.69e+00	<none>
signal_mean	1.2500e+02	1.2528e+02 +/-	1.05e-01	<none>
tailAlpha	-1.5000e+00	-1.5907e+00 +/-	1.09e+00	<none>
tailN	5.0000e+00	8.2415e-01 +/-	9.24e-01	<none>

minimize Finished
status:-1

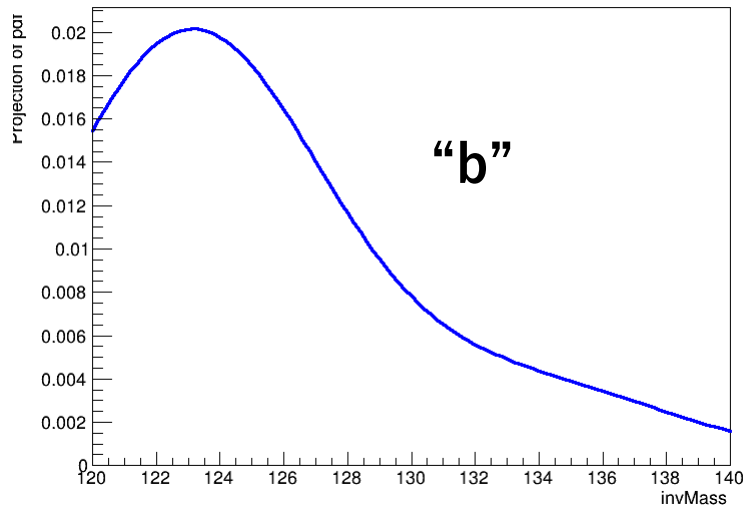
RooFitResult: minimized FCN value: -123.143, estimated distance to minimum: 99007.3
covariance matrix quality: Full matrix, but forced positive-definite
Status : MINIMIZE=-1

Floating Parameter	InitialValue	FinalValue +/-	Error	GblCorr.
mRes	1.0000e+00	2.5742e+00 +/-	1.85e-01	<none>
ratio	9.0000e-01	9.7668e-01 +/-	2.88e-03	<none>
sigL	3.0000e+00	1.0014e-01 +/-	9.35e-04	<none>
sigR	3.0000e+00	7.9837e+00 +/-	7.78e-03	<none>
signal_mean	1.2500e+02	1.2476e+02 +/-	2.18e+00	<none>
tailAlpha	-1.5000e+00	-6.6789e-04 +/-	1.50e+01	<none>
tailN	5.0000e+00	3.8764e-01 +/-	7.94e-02	<none>

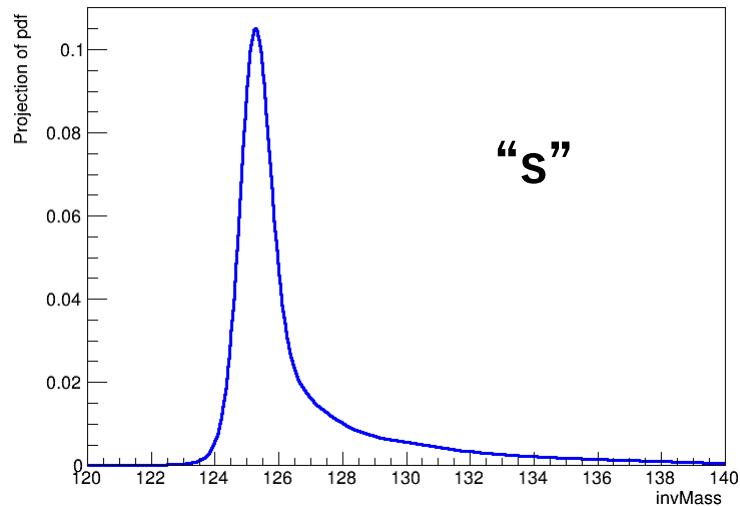
minimize Finished
status:0

PDF (obtained from “keys” option)

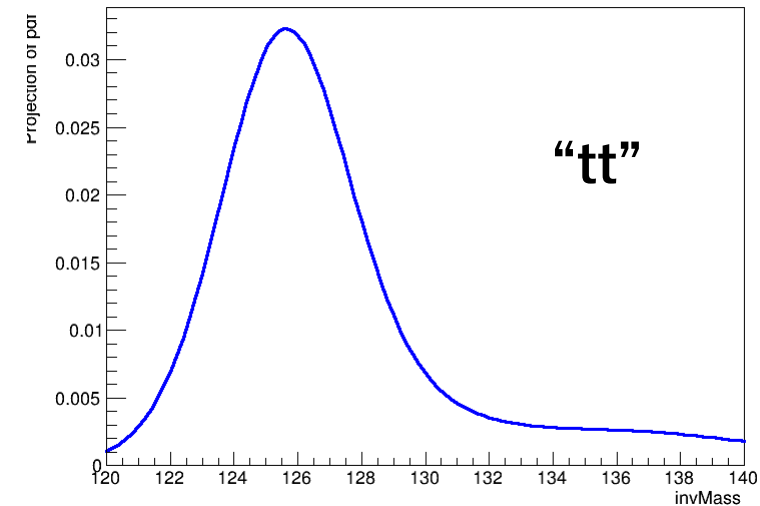
A RooPlot of "invMass"



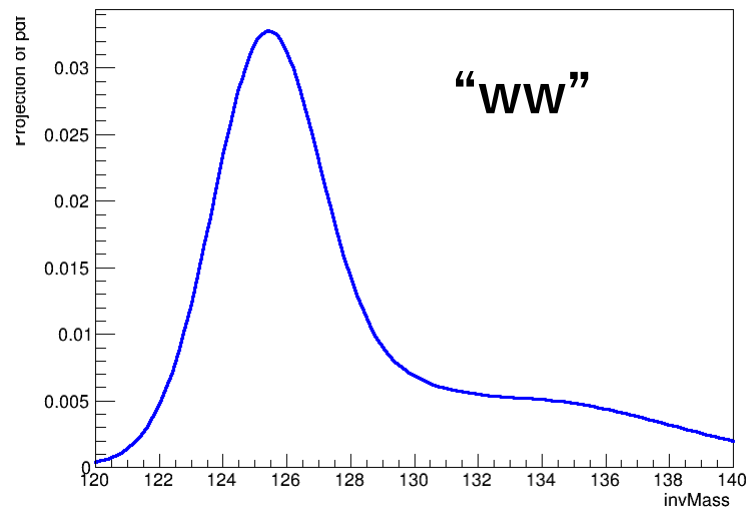
A RooPlot of "invMass"



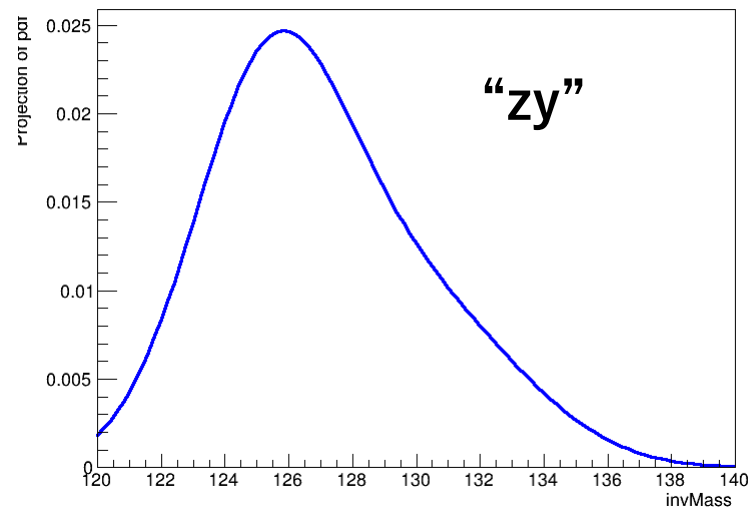
A RooPlot of "invMass"



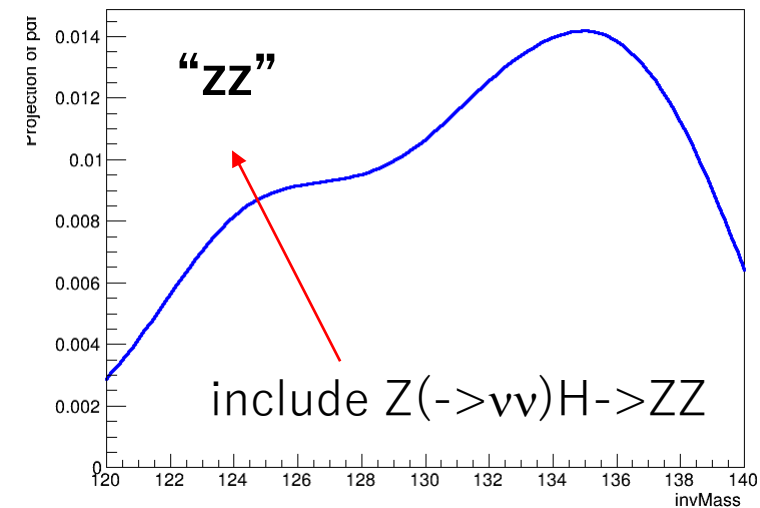
A RooPlot of "invMass"



A RooPlot of "invMass"



A RooPlot of "invMass"



Change the fitting function to the PDF for “zz”

```
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Please enter your option:
0.4.5
plot pictures and save results
fit results...
compiling ./src/shapeFit.cxx
compiling and linking shapeFit
Begin 240 workspace building
Makeing workspace for channel mzvj
primez_label=s,mzvj, 1st func=DSCB
primez_label=zz,mzvj, 1st func=DSCB
Info in <Minuit2>: Minuit2Minimizer::Minimize : Minimization did NOT converge, E
primez_label=ww,mzvj, 1st func=DSCB
primez_label=tt,mzvj, 1st func=DSCB
primez_label=zy,mzvj, 1st func=keys
primez_label=b,mzvj, 1st func=keys

*** Break *** segmentation violation
```



```
-bash-4.1$ ./job/run.sh
compiling ./src/shapeFit.cxx
compiling and linking shapeFit
Begin 240 workspace building
Makeing workspace for channel mzvj
proc = s , func =
f is null
primez_label=s,mzvj, 1st func=DSCB
proc = zz , func =
f is null
primez_label=zz,mzvj, 1st func=exp2
proc = ww , func =
f is null
primez_label=ww,mzvj, 1st func=DSCB
proc = tt , func =
f is null
primez_label=tt,mzvj, 1st func=DSCB
proc = zy , func =
f is null
primez_label=zy,mzvj, 1st func=keys
proc = b , func =
f is null
primez_label=b,mzvj, 1st func=keys
Before import PDF
modelname = SUM::modelSB(n_s*pdf_s,n_zz*pdf_zz,n_ww*pdf_ww,n_tt*pdf_tt,n_zy*pdf_zy,n_b*pdf_b)

*** Break *** segmentation violation

=====
There was a crash.
This is the entire stack trace of all threads:
=====
#0 0x000000306deac8dd in waitpid () from /lib64/libc.so.6
#1 0x000000306de3e4e9 in do_system () from /lib64/libc.so.6
#2 0x000000306de3e820 in system () from /lib64/libc.so.6
#3 0x00007f39713b8ebd in TUnixSystem::StackTrace() () from /cvmfs/sft.cern.ch/lcg/releases/
/lib/libCore.so
#4 0x00007f39713bb624 in TUnixSystem::DispatchSignals(ESignals) () from /cvmfs/sft.cern.ch/
lc6-gcc62-opt/lib/libCore.so
#5 <signal handler called>
```

but , the segmentation fault happens after that.
seems around handling ROO workspace and related. (coding problem ?)