

# Report

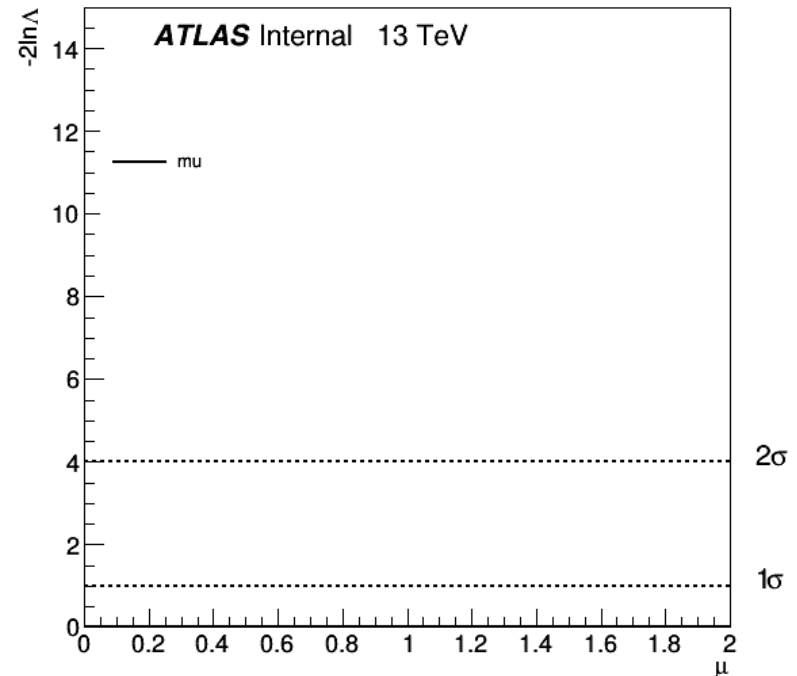
Zhan Li

# The problem that I met

- 1. For MELA, I cut a lot of bins, which made the entries of some bins are 0. It leads to some value becoming nan (not a number) and crash.
- I asked Abdualazem about this, he told me that:
- Firstly, I shall divided them into less bins.
- Secondly, at first I use these channels:  $4\mu$ ,  $2\mu 2e$ ,  $4e$  and  $4l$ . Abdualazem told me I should look at the inclusive channels instead of individual ones.

# The problem that I met

- 2. There might be something wrong with mu\_qqZZ but I am not sure if it is really wrong.
- 3. There are still problems with the systematic uncertainties.
- The problems about mu\_offshell:
- The problem about muZZ is that when I scan that it crashed.



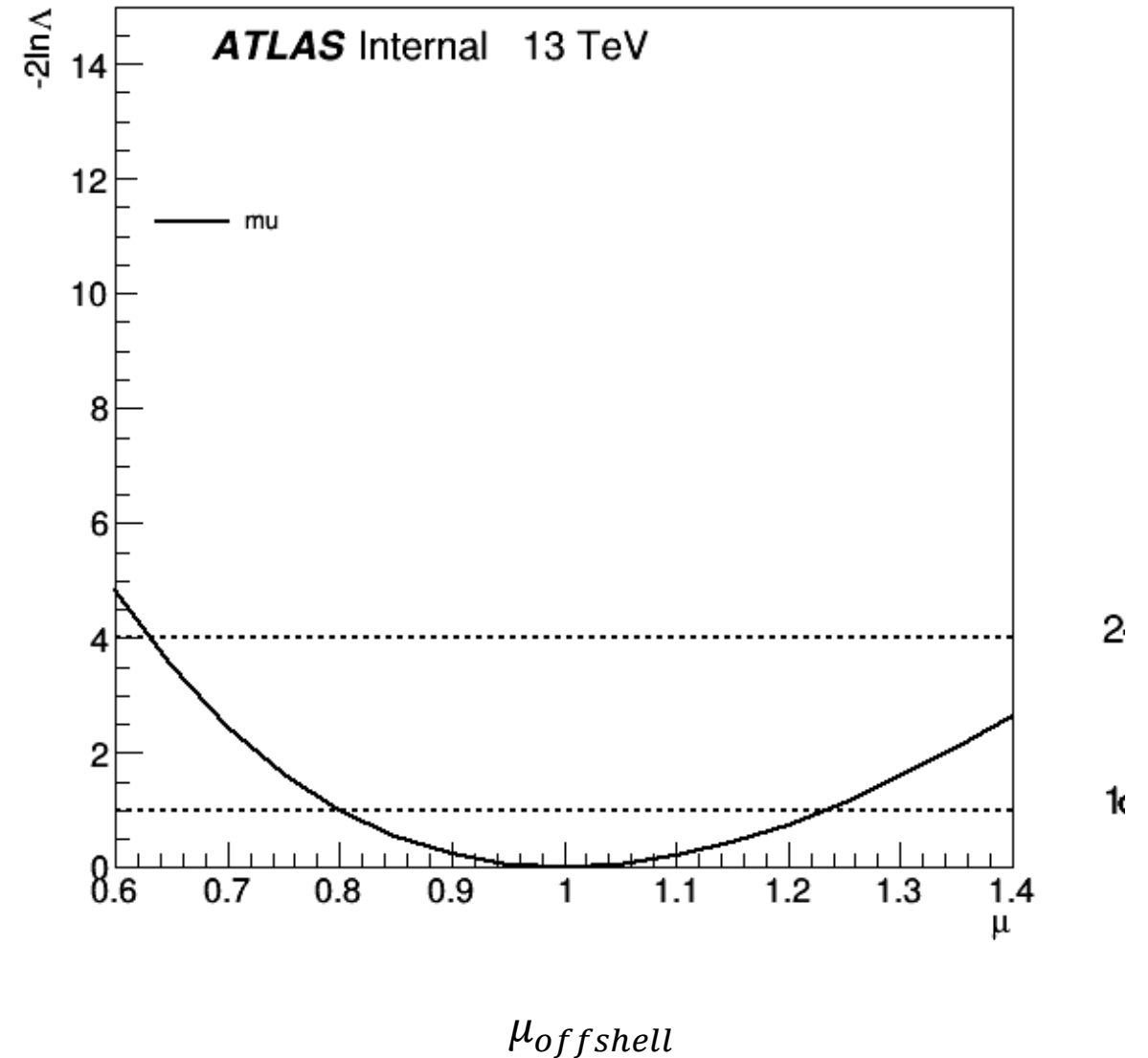
# The problems

- So for all of the analysis, because the program cannot work with the systematic uncertainties, so I only have the result of fixing.

# m4l CR fixing

- observable: m4l\_fsr
- cut: control region [130, 220]GeV

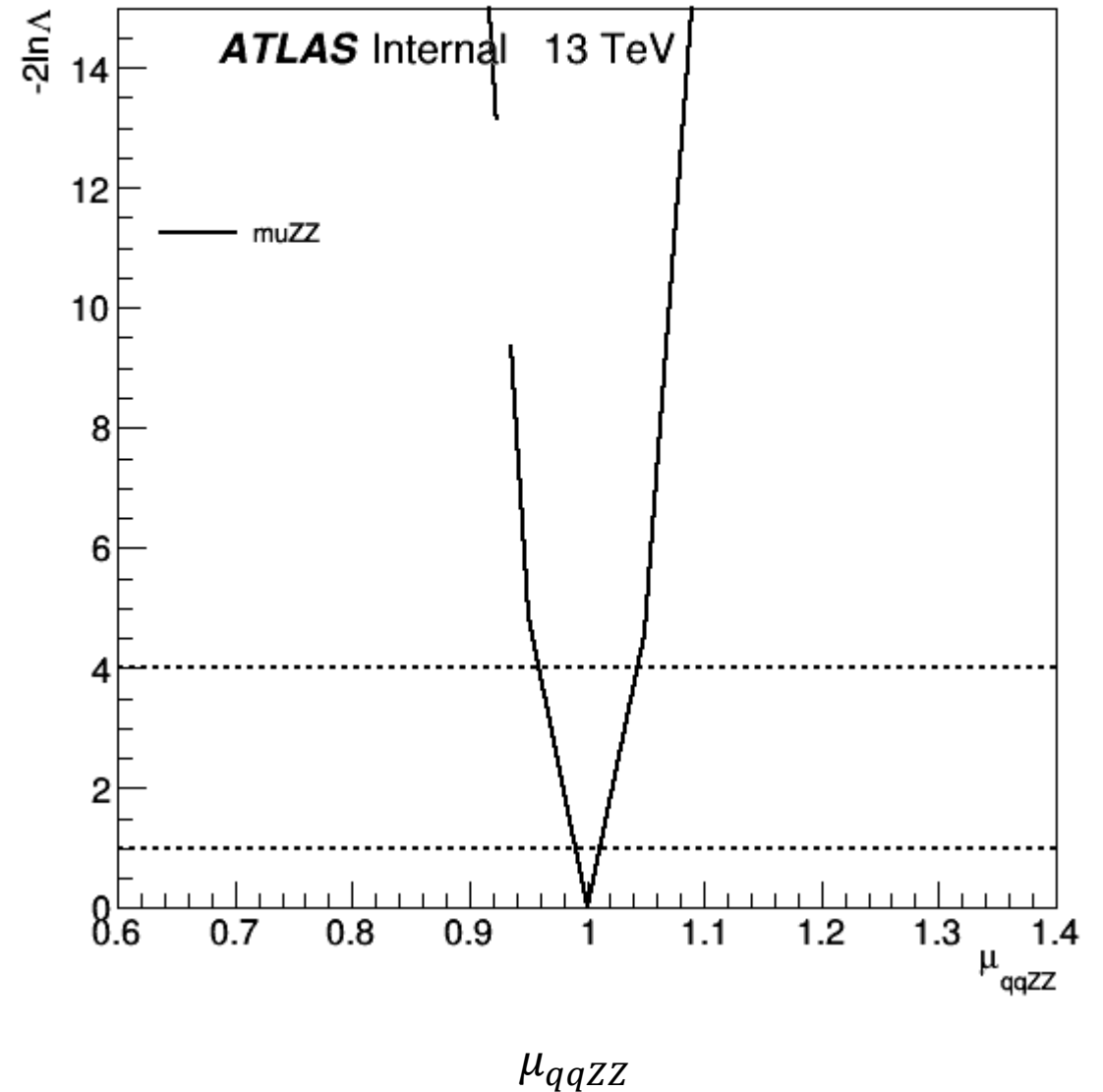
	Strength Value
$\mu_{offshell}$	$1^{+0.23}_{-0.20}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



# m4l CR fixing

- observable:  $m_{4l\_fsr}$
- cut: control region [130, 220]GeV

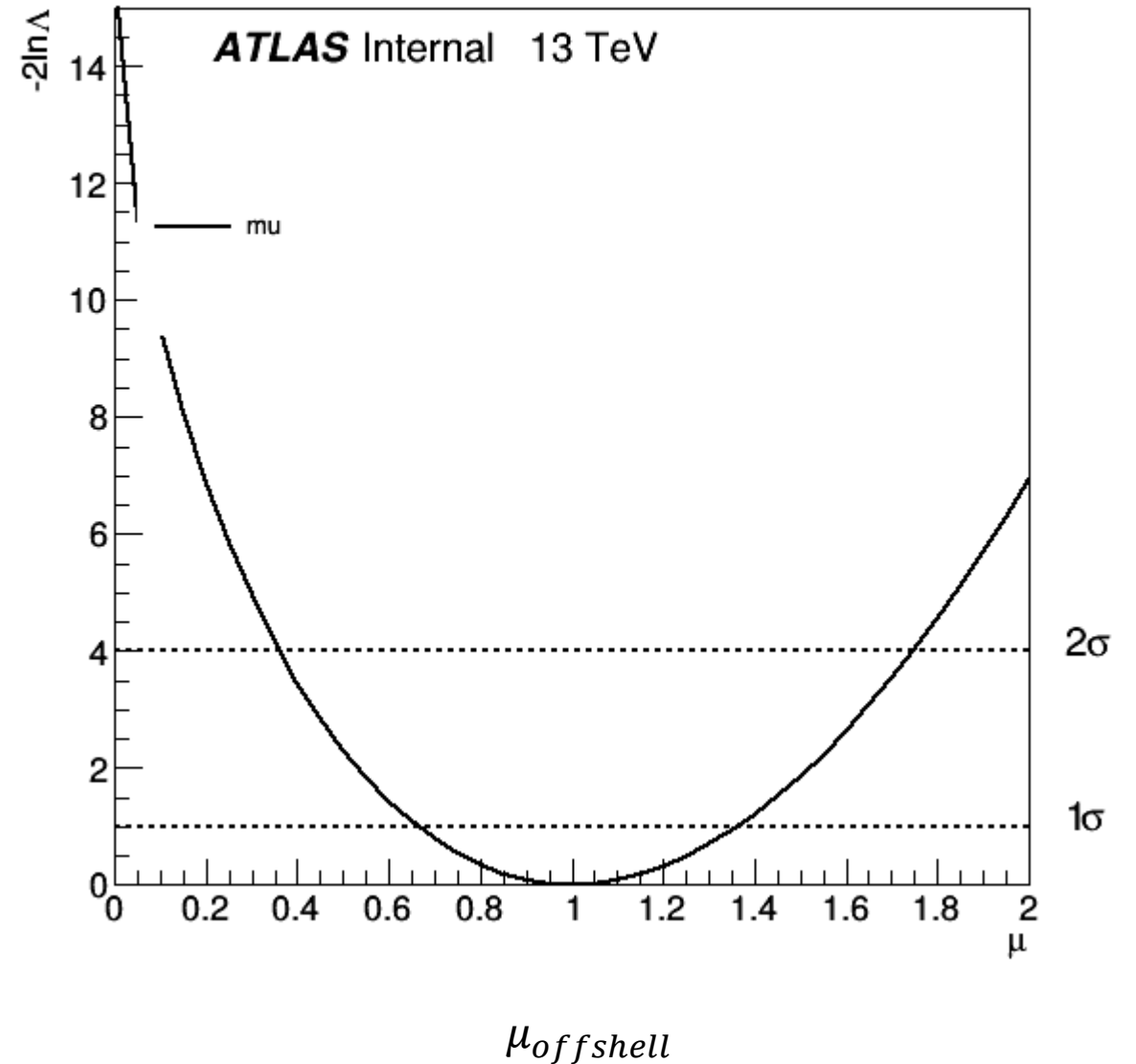
	Strength Value
$\mu_{offshell}$	$1^{+0.23}_{-0.20}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



# m4l SR fixing

- observable:  $m_{4l\_fsr}$
- cut: control region [220, 2000]GeV

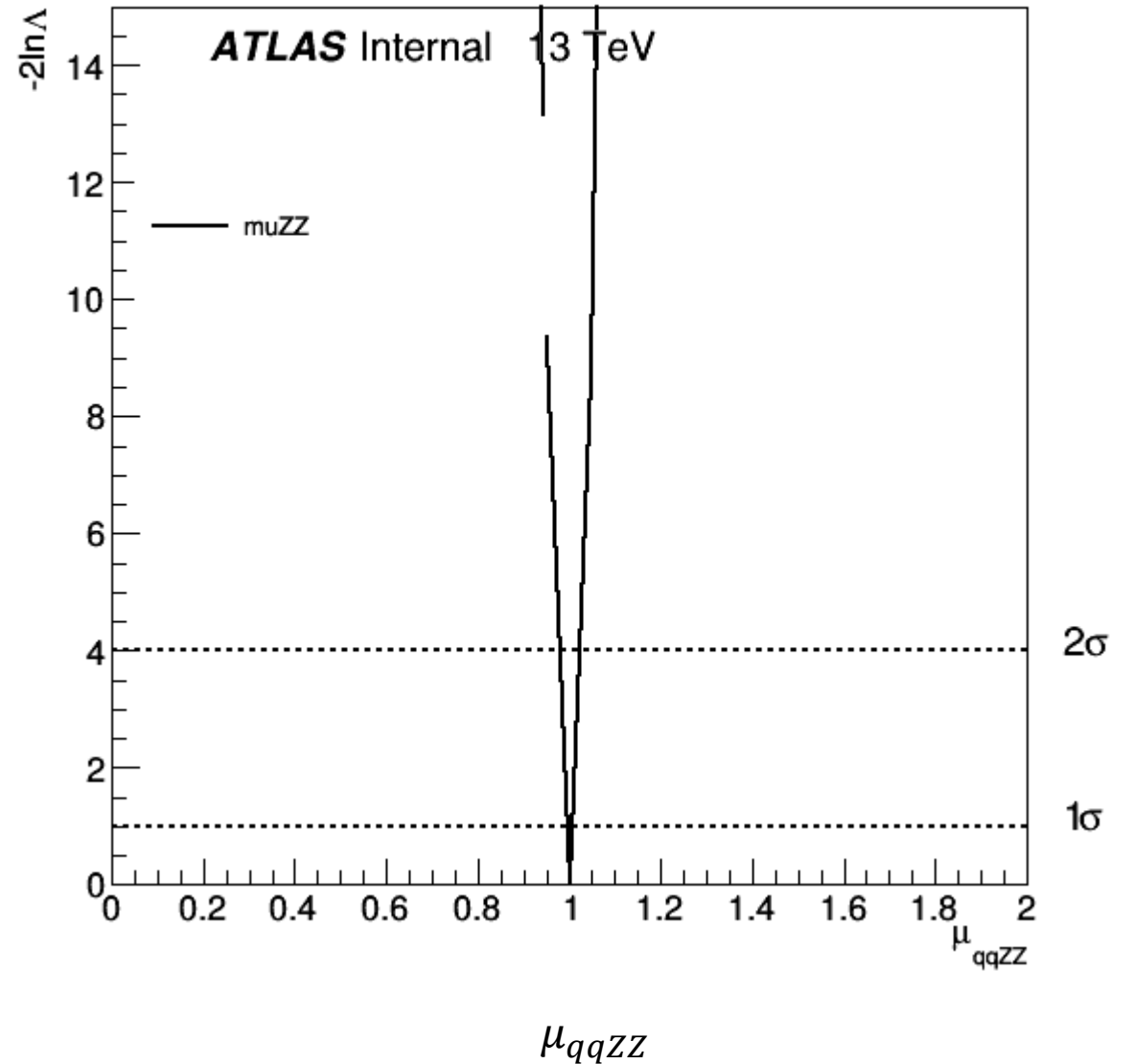
	Strength Value
$\mu_{offshell}$	$1^{+0.37}_{-0.33}$
$\mu_{qqZZ}$	$1^{+0}_{-0.01}$



# m4l SR fixing

- observable:  $m_{4l\_fsr}$
- cut: control region [220, 2000]GeV

	Strength Value
$\mu_{offshell}$	$1^{+0.37}_{-0.33}$
$\mu_{qqZZ}$	$1^{+0}_{-0.01}$

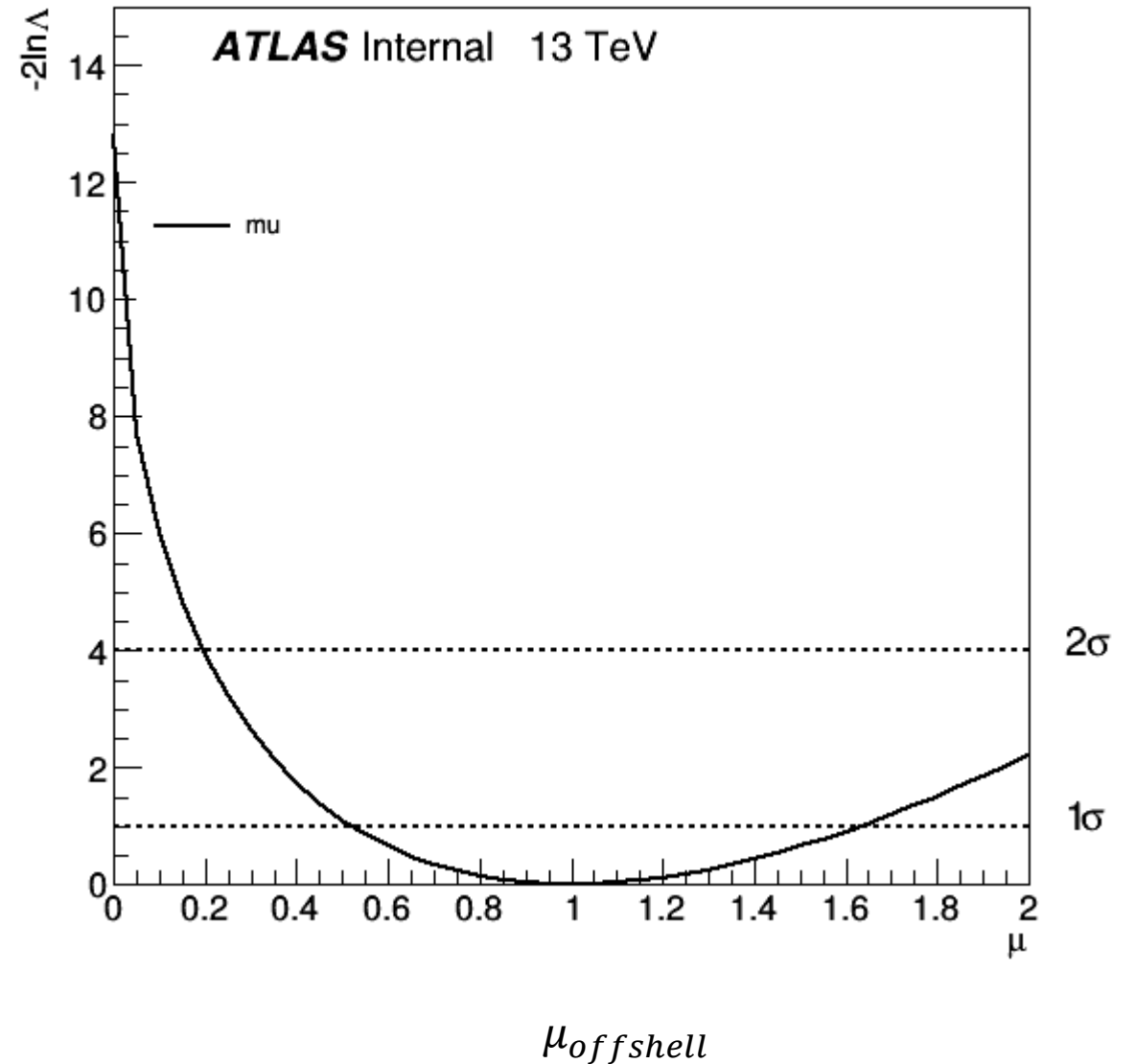




# MELA CR fixing

- observable: MELA
- cut: control region [130, 220]GeV
- and MELA: [-7, -5] [-5, -3]  
[-3, -1] [-1, 1]

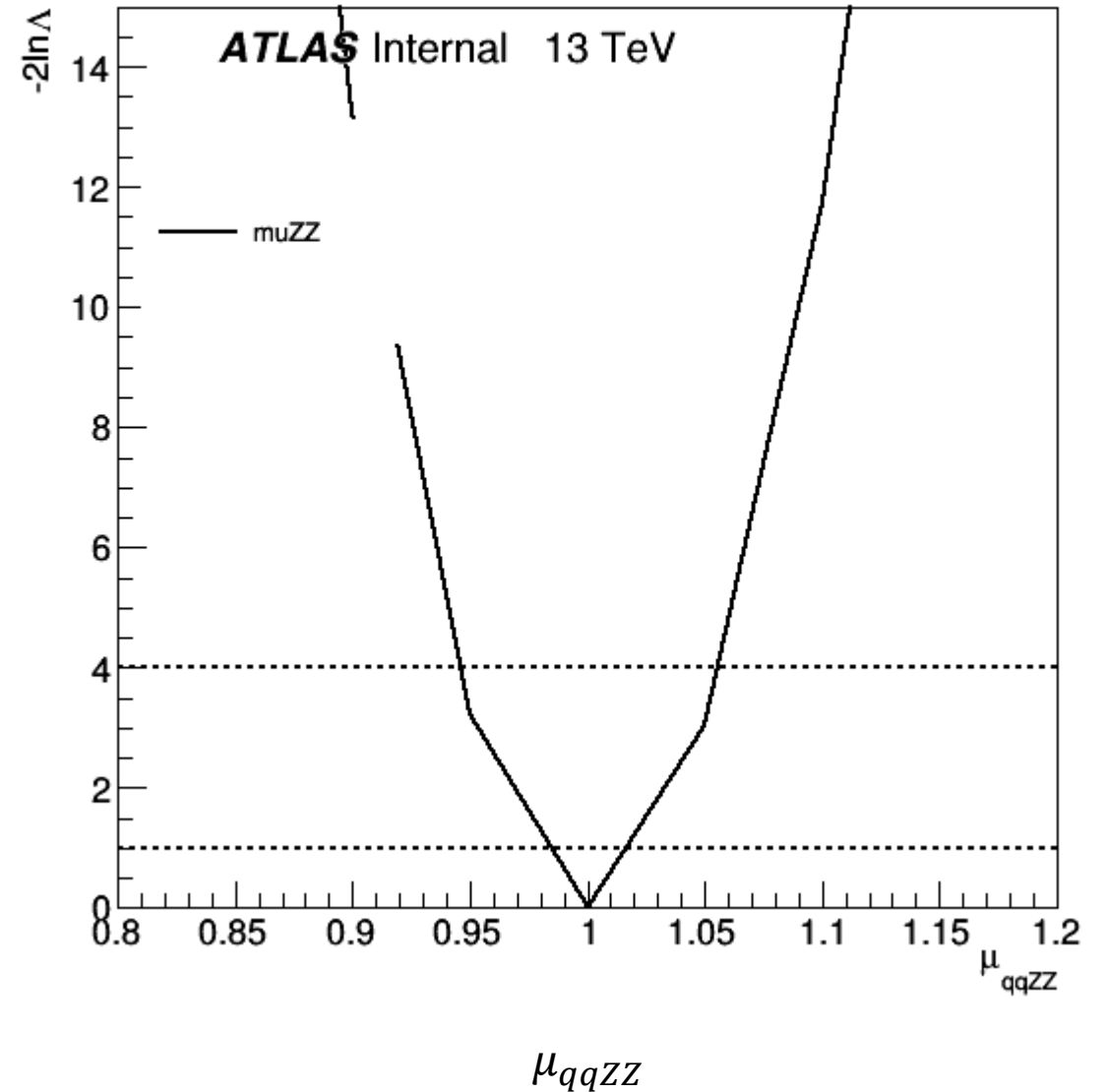
	Strength Value
$\mu_{offshell}$	$1^{+0.63}_{-0.48}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



# MELA CR fixing

- observable: MELA
- cut: control region [130, 220]GeV
- and MELA: [-7, -5] [-5, -3]  
[-3, -1] [-1, 1]

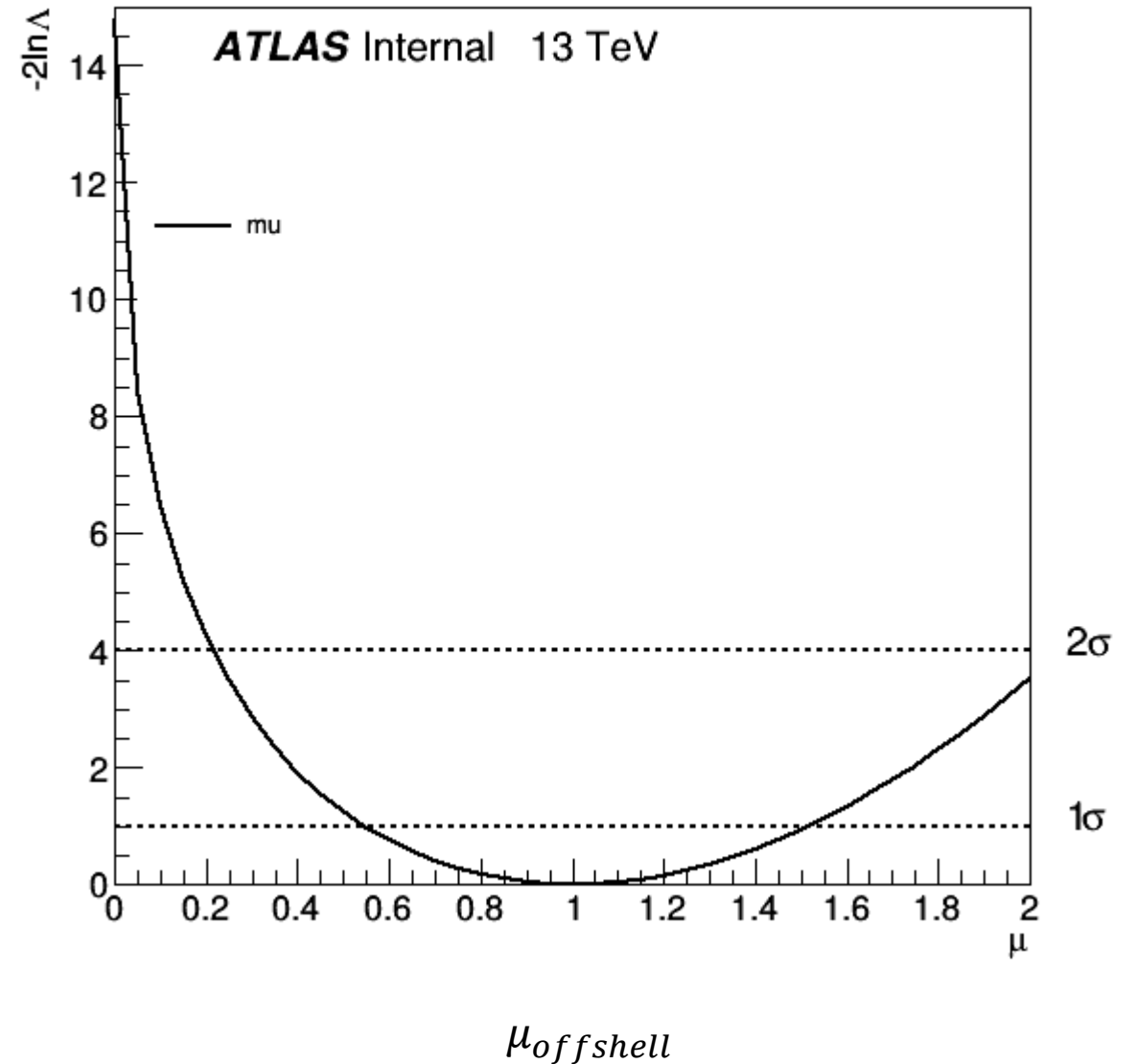
	Strength Value
$\mu_{offshell}$	$1^{+0.63}_{-0.48}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



# MELA SR fixing

- observable: MELA
- cut: control region [220, 2000]GeV
- and MELA: [-8,-6] [-6,-4]  
[-4,-2] [-2,0]

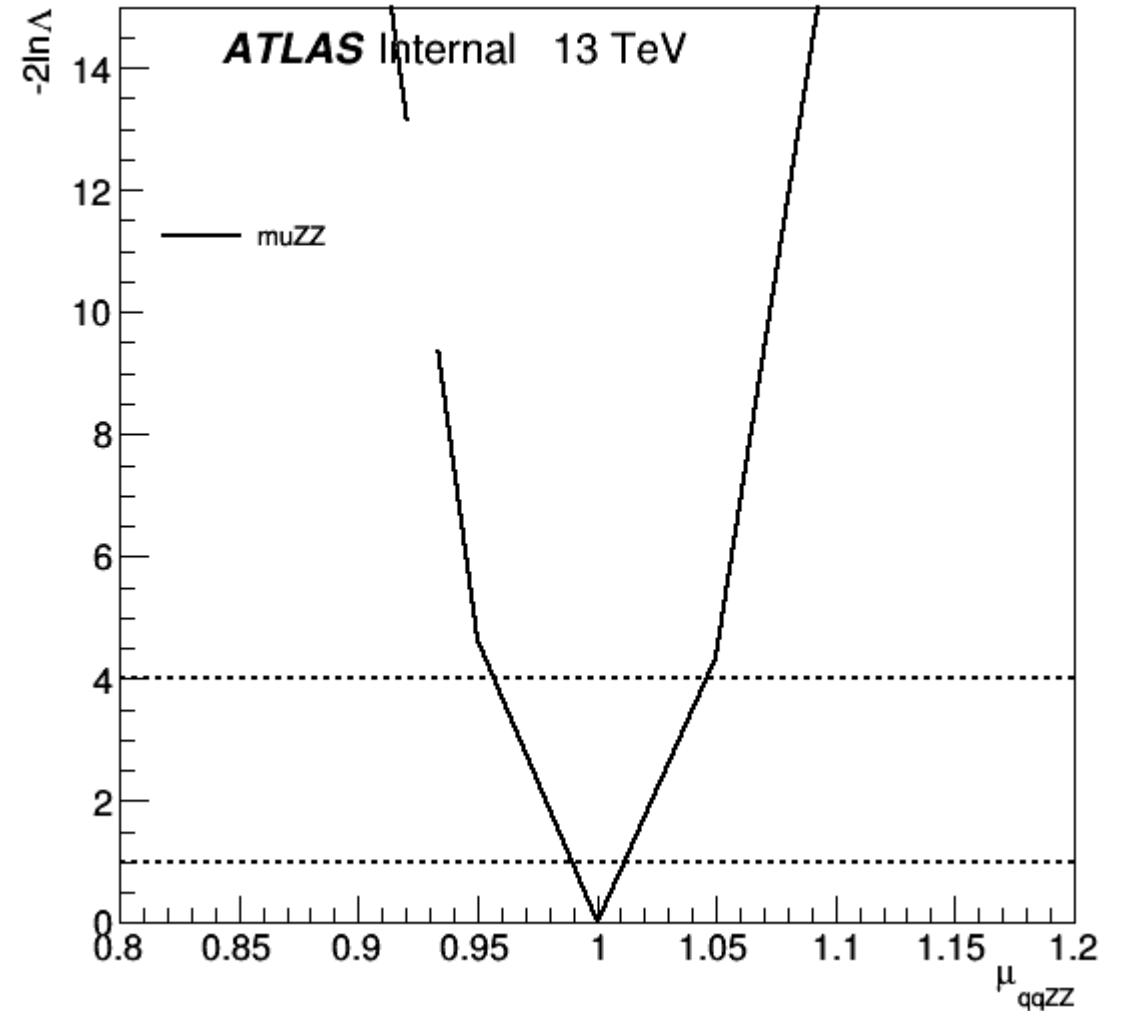
	Strength Value
$\mu_{offshell}$	$1^{+0.52}_{-0.46}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



# MELA SR fixing

- observable: MELA
- cut: control region [220, 2000]GeV
- and MELA: [-8,-6] [-6,-4]  
[-4,-2] [-2,0]

	Strength Value
$\mu_{offshell}$	$1^{+0.52}_{-0.46}$
$\mu_{qqZZ}$	$1^{+0.02}_{-0.01}$



$\mu_{qqZZ}$

- Thank you!