DY templates determination

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Fast reminder

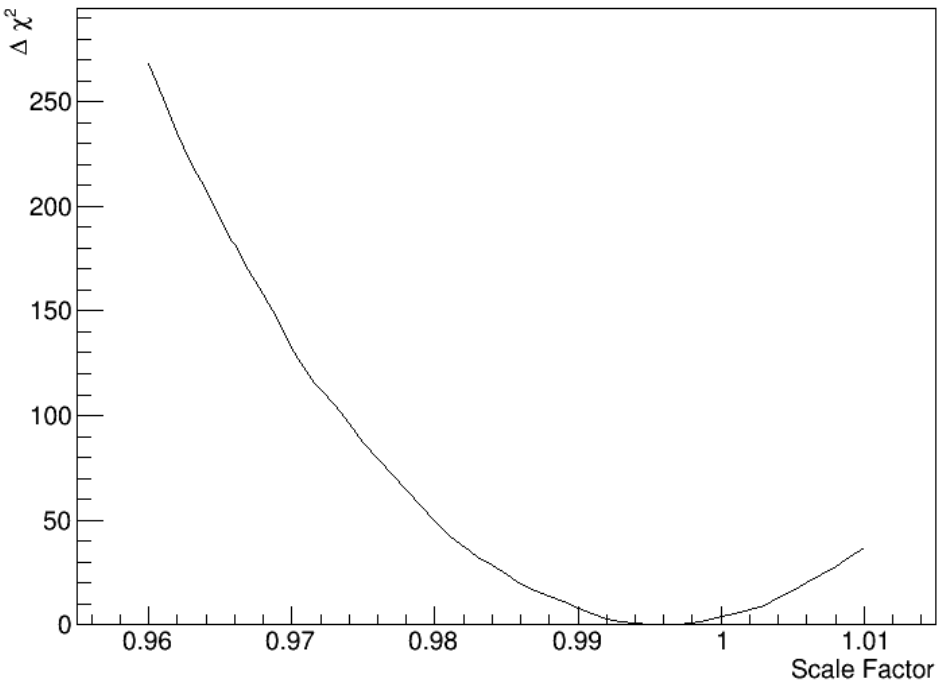
- On the previous meetings I have shown that I can perform fits to data, using two background templates and a signal template.
- For that fits I used just the Z^0 data template.
- Since we are fitting the isolation variable:

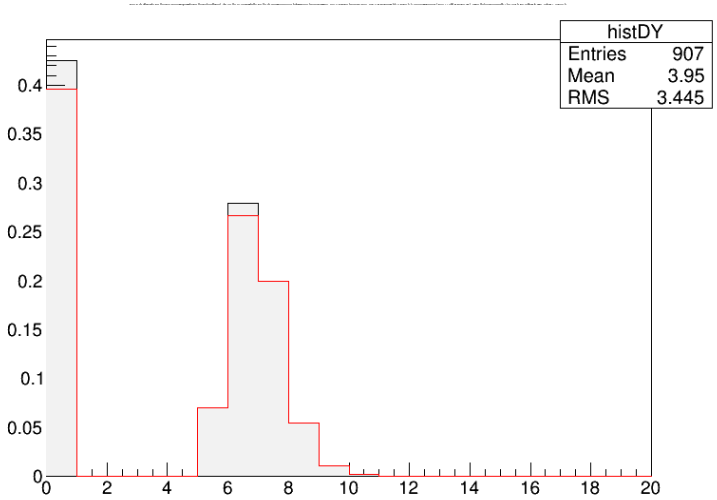
$$\mu\mu_{\text{iso}} = \log(\max(p_T^{\text{cone}}(\mu^i, 0.5) - p_T^{\text{cone}}(\mu^i, 0.1)), \mu^i \in \{\mu^=, \mu^-\} \tag{1}$$

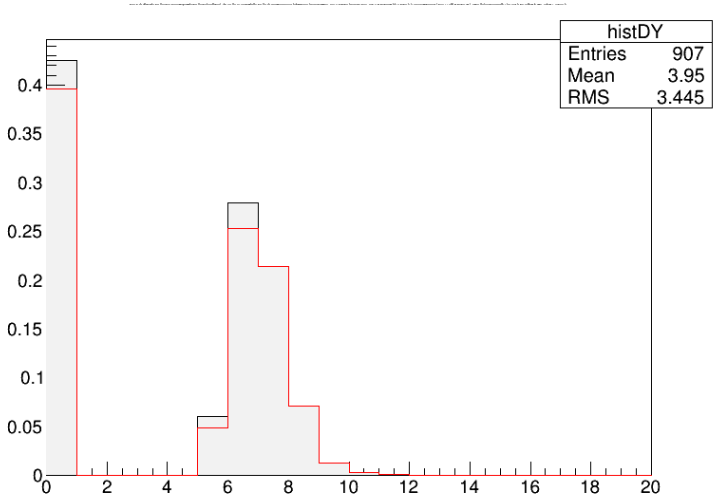
- The isolation is mass dependent, so for each dimuon mass we need to have a new signal template.
- Today on how to derive them.

Nicola template

- Take DY MC, calculate the scaling factor between given mass bin and the Z^0 mass bin.
- Has problem later on for $4 < y < 4.5$ as there is very little Z^0 in data.
- Example of the scan.

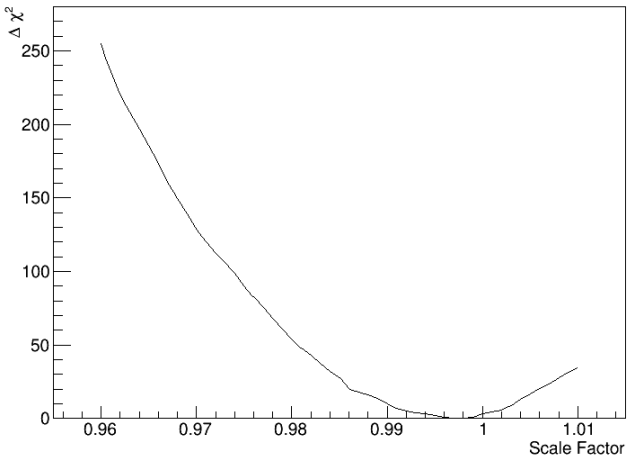






My template simple version

- Take DY MC, calculate the scaling factor between given bin and the template derived from the Z^0 and $\Upsilon(1S)$
- We have lots of $\Upsilon(1S)$ in data in $4 < y < 4.5$
- Template before scaling is a linear combination of $\Upsilon(1S)$ and Z^0 templates. Considered using a log dependence but didn't find significance difference.



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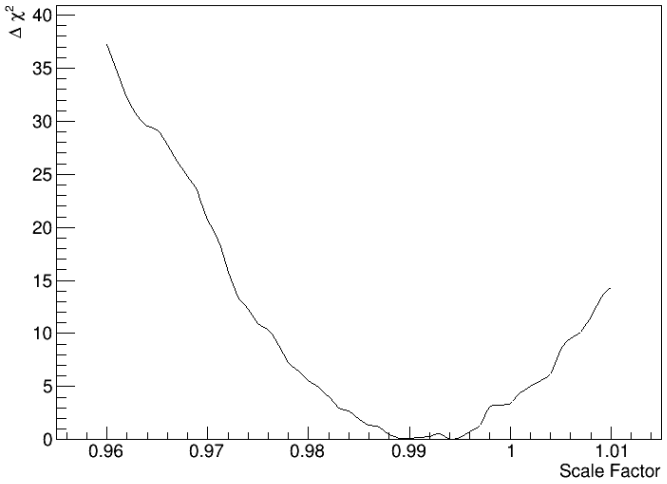
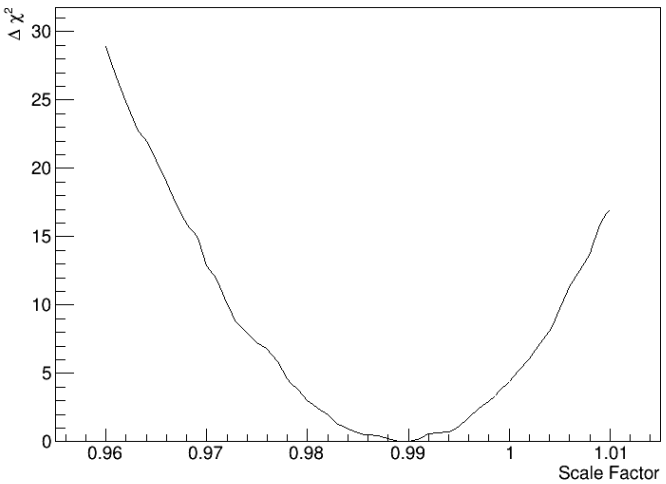
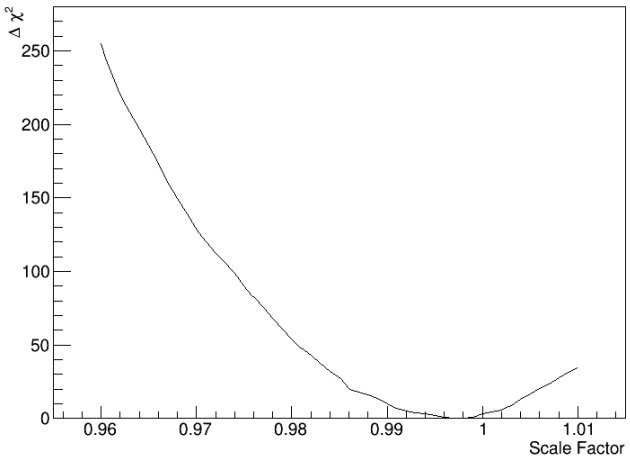
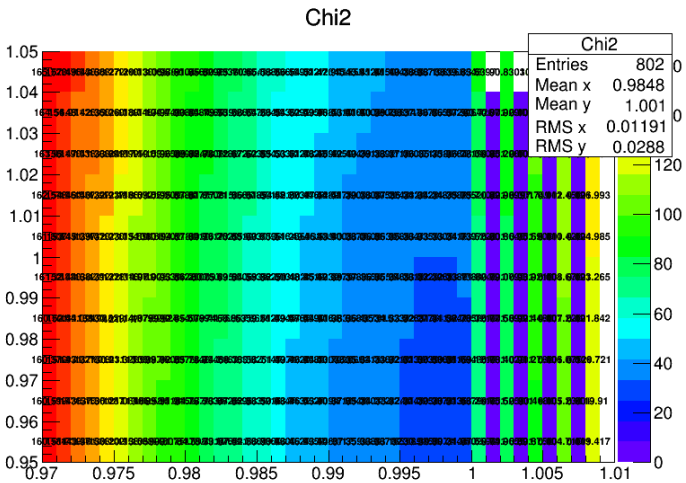


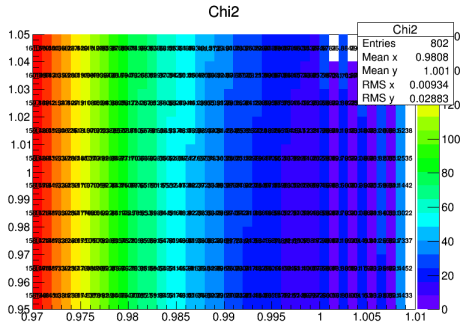


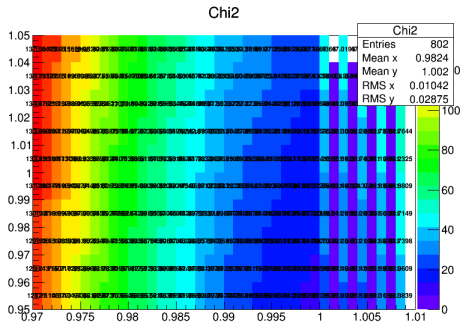


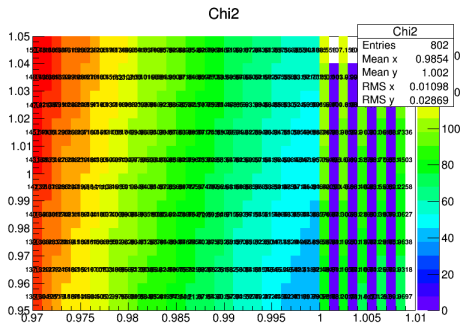
My template hard version

- Take DY MC, calculate the scaling factor between given bin and the template derived from the Z^0 and $\Upsilon(1S)$
- but instead of just scaling the distribution, scale also the ration between bin 0 and the rest.
- Now we fit two parameters.









Conclusions

- In the fit we see that the second parameter is need to better describe the template.
- This would be my default option after fixing the plotting bug ;)
- After that do the fit and write down the note.