

# TProfile class options

Jorge Torres

February 11, 2018

Let  $Y$  be one of the values in a bin, not necessarily distributed “Poissonly”,  $N$  the number of entries of a bin, and RMS=Root Mean Square, the standard deviation of the  $Y$  data in the bin. The computation of errors is based on the following criteria for the different listed options:

Option	How are errors calculated?	Condition (if)
‘,’ (Default)	$\text{RMS}/\sqrt{N}$	$\text{RMS} \neq 0$
	$\sqrt{Y}/\sqrt{N}$	$\text{RMS} = 0, N > 0$
	0	$N = 0$
‘s’	RMS	$\text{RMS} \neq 0$
	$\sqrt{Y}$	$\text{RMS} = 0, N > 0$
	0	$N = 0$
‘i’	$\text{RMS}/\sqrt{N}$	$\text{RMS} \neq 0$
	$1/\sqrt{12 * N}$	$\text{RMS} = 0, N > 0$
	0	$N = 0$
‘g’	$\sum_Y 1/\sigma_Y^2$	

Comments:

- In option ‘g’ , these errors corresponds to the standard deviation of the weighted mean, where each measurement  $Y$  is uncorrelated and has an error  $\sigma_Y$ , which is expressed in the weight used to fill the Profile:  $w = 1/\sigma_Y^2$ . Option ‘g’ would be useful when all  $Y$ ’s are experimental quantities measured with different precision  $\sigma_Y$ .

Source: <https://root.cern.ch/doc/master/classTProfile.html>