Hands-on Z' reconstruction with ROOT/C++

report

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exercise 1: $t\bar{t}$

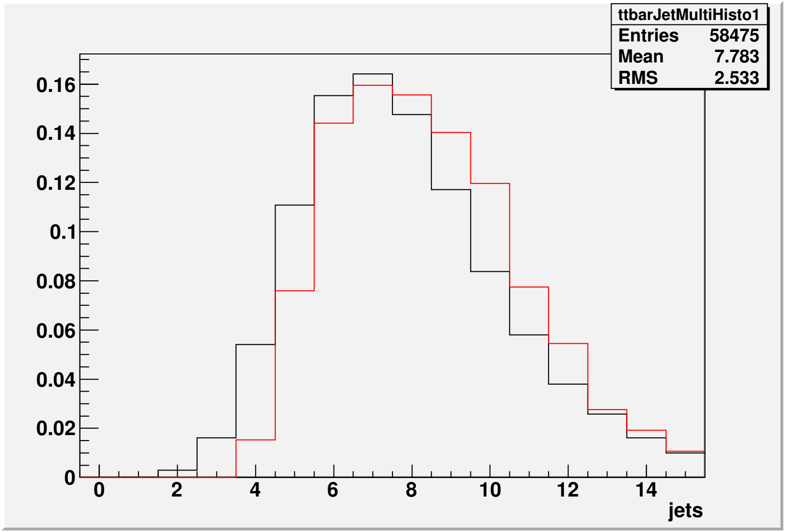


Figure: black: raw data; red: data after the cut

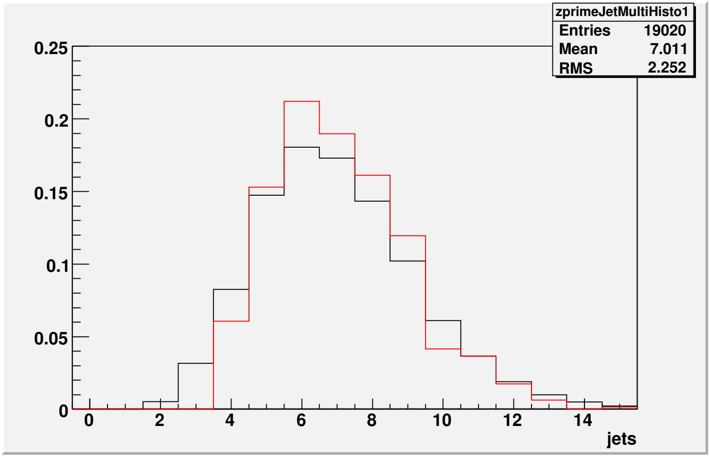


Figure: black: raw data; red: data after the cut

exercise 2: reconstruction of the W mass: W $\longrightarrow q\bar{q}$

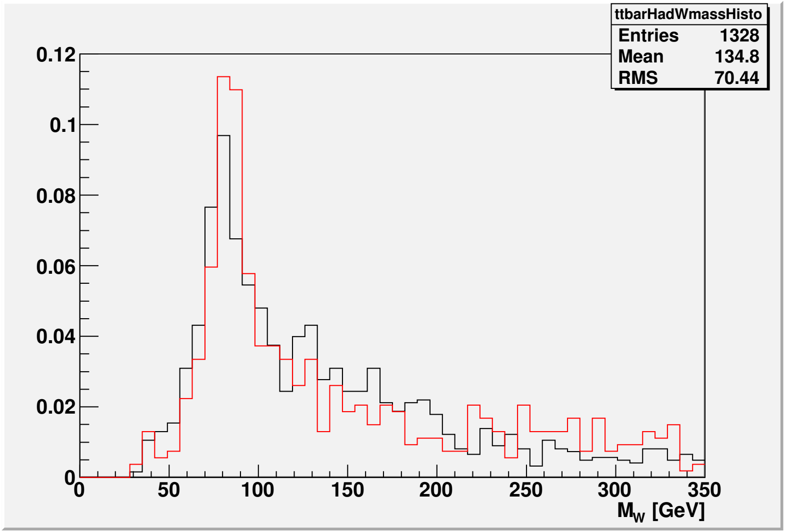
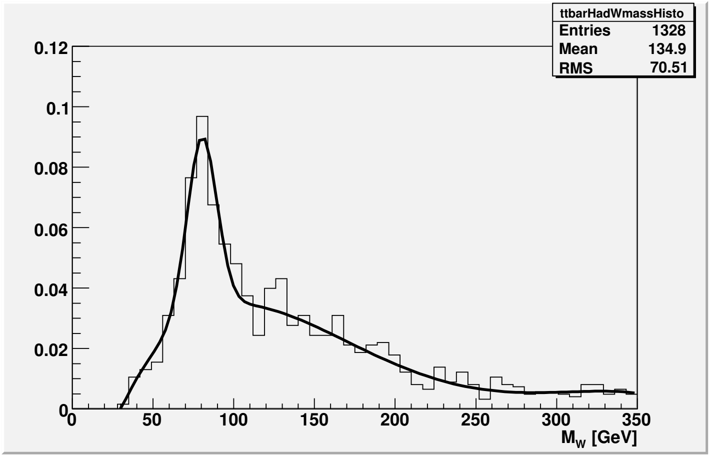


Figure: black: $t\bar{t}$; red: Z'

exercise 3: Fit upon the W mass using Tschebyschov and a gaussian distribution



exercise 4: reconstruction of the hadronic top quark using the b-jet closest to the W boson

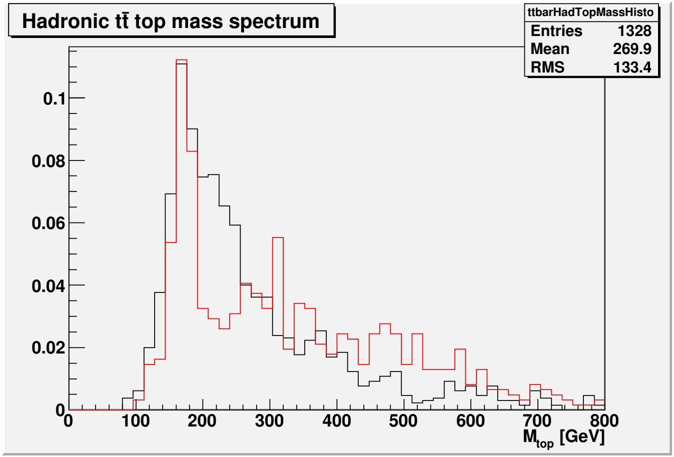


Figure: red: Z', black: $t\bar{t}$

exercise 5: reconstruction of the leptonic W boson using the missing E_T: $t\bar{t}$

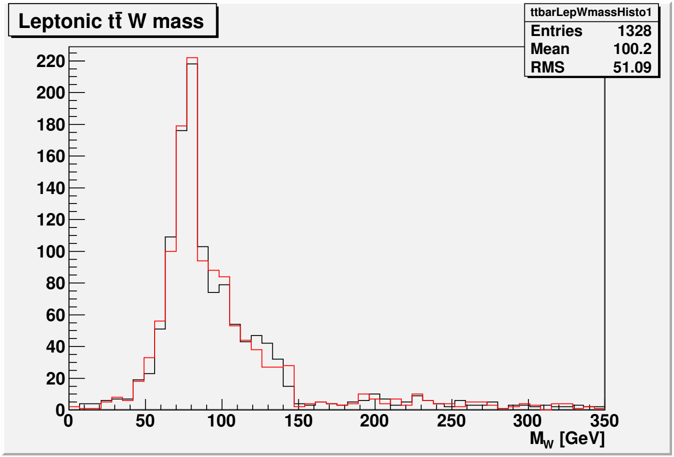


Figure: black: solution1 ; red: solution2

exercise 5: reconstruction of the leptonic W boson using the missing E_T: Z'

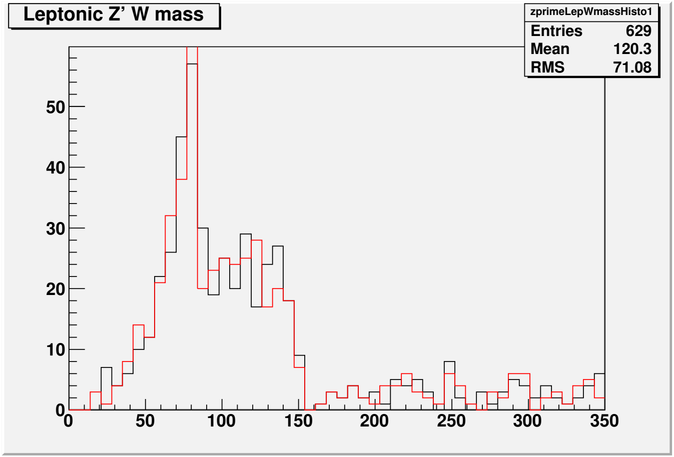


Figure: black: solution1; red: solution2

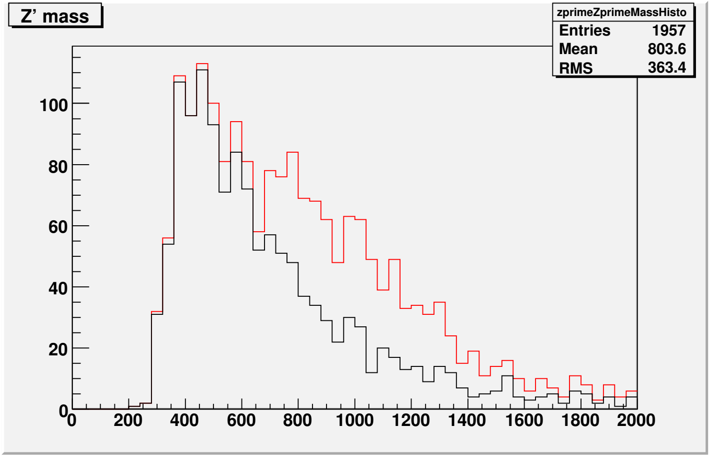


Figure: black: $t\bar{t}$; red: Z'

exercise 7: calculation of Δ R ($t\bar{t}$) using the $t\bar{t}$-sample

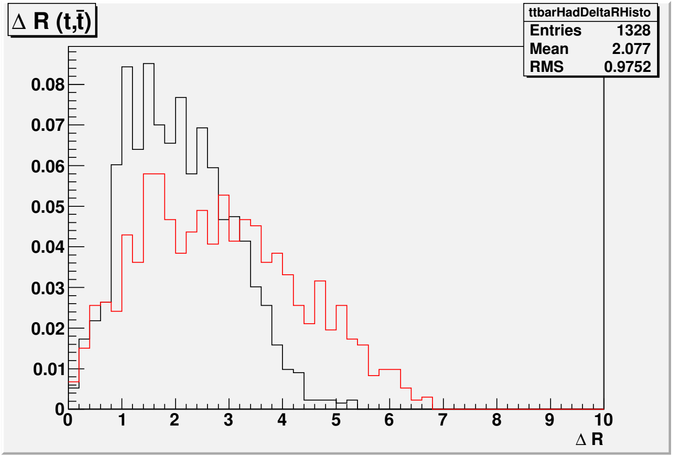


Figure: black: hadronic; red: leptonic

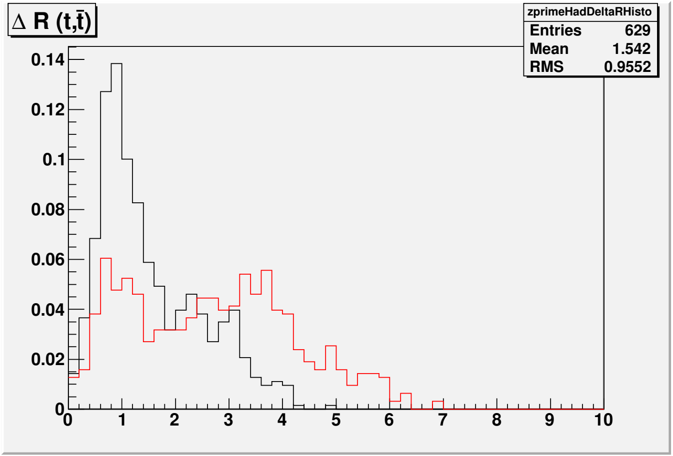


Figure: black: hadronic; red: leptonic

exercise 7: mass distribution after a smart ΔR-cut (without normalization)

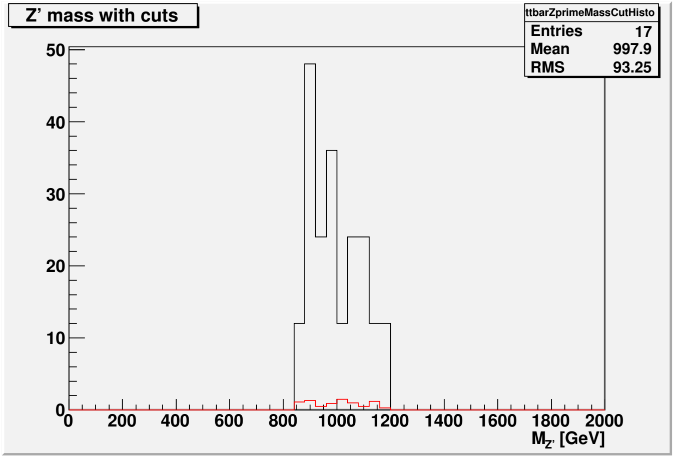
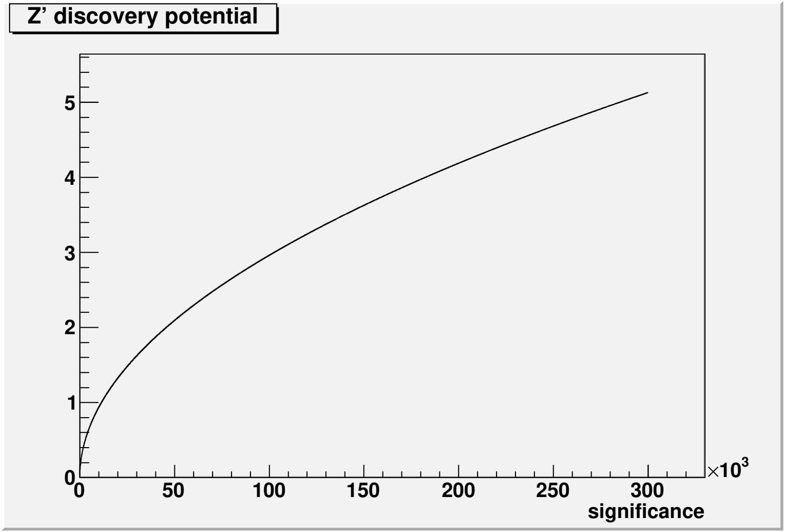
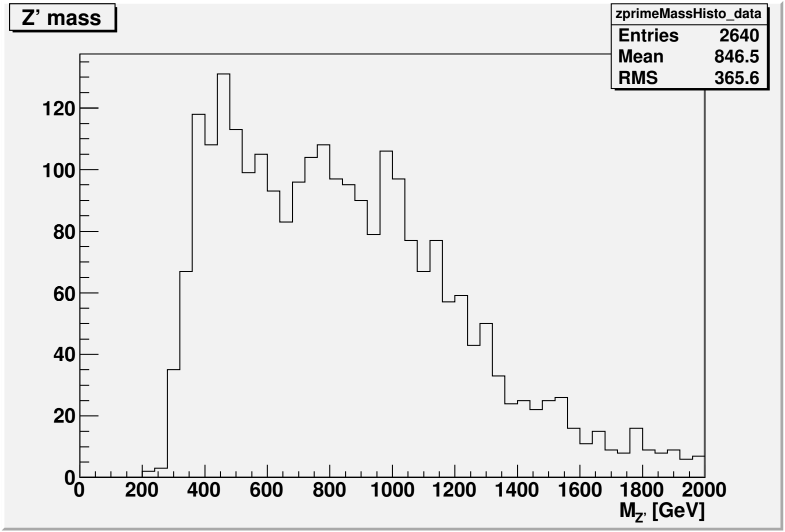


Figure: black: $t\bar{t}$; red: Z'

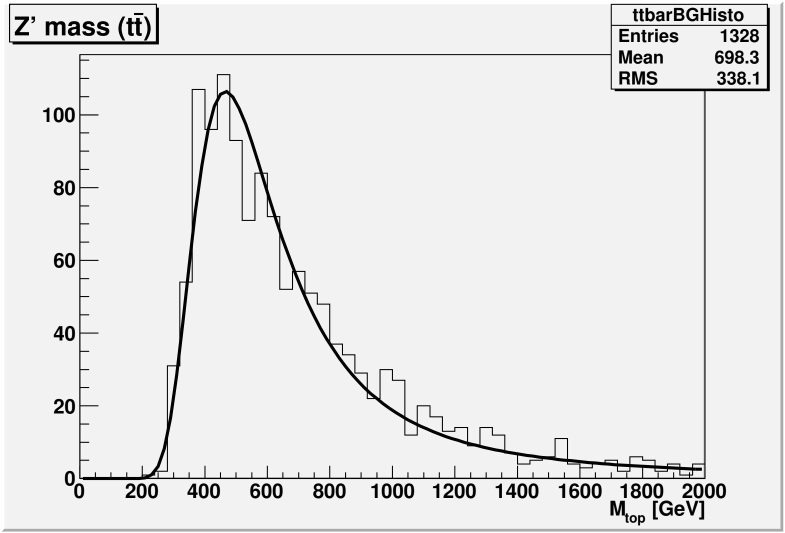
exercise 8: Z's discovery potential with respect to the luminosity



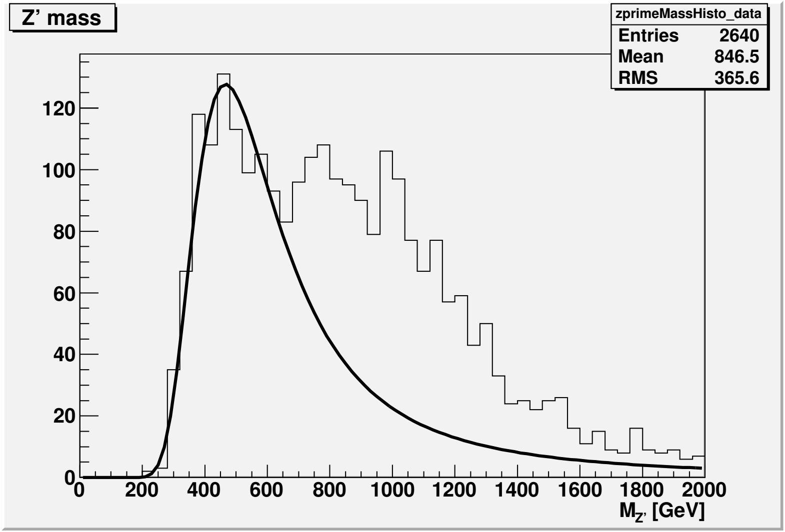
exercise 10: $t\bar{t} + Z'$



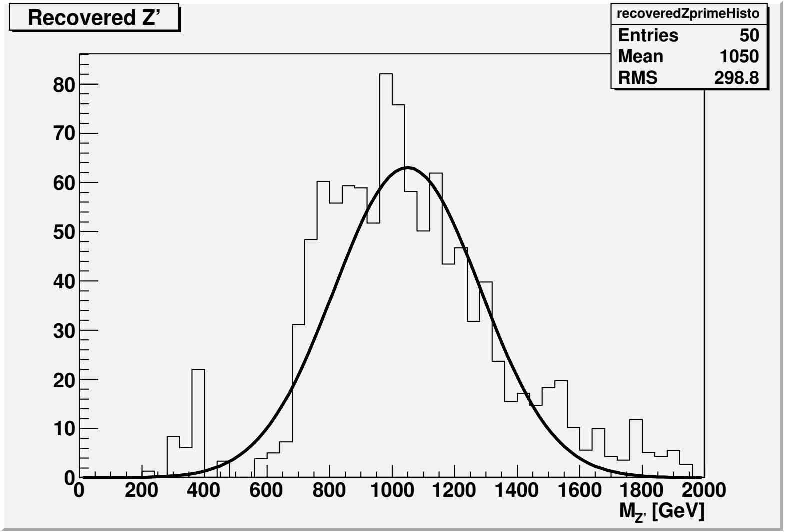
exercise 10: SM-$t\bar{t}$ invariant mass fitted by a Landau distribution



exercise 10: Z' added on



exercise 10: $t\bar{t}$-SM background cut off



comments

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- carrying out of the method signal vs. background was useful and nice
- good instructions (but regrettably too long)

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- What the hell is Z' ??? Why didn't we deal with Higgs?
- one's exertion of influence on the programme was limited - it is not enough to delete comment symbols
- Without going through the tutorial again it would have been impossible for us to understand and follow its content.
- a better preparation of the plots (headings, labelling of the axis ...) would have been helpful as well