University of Michigan

MIPP

How to make the temperature correction using the temperature probe values?

Thanks to Holger for assistance

RISlowCtrl fSlowContr = RISlowCtrl::Instance() - place it on top before any loop

fSlowContr.Init(rs⟶run) - just after reading the subrun

const RISlowCtrlDev fTempProbe2 = fSlowContr.GetDev("F:MCTEM2")

double fTempThisEvent = fTempProbe2.ValueFromTime(evt⟶ts.GetSec()) - inside of the event loop

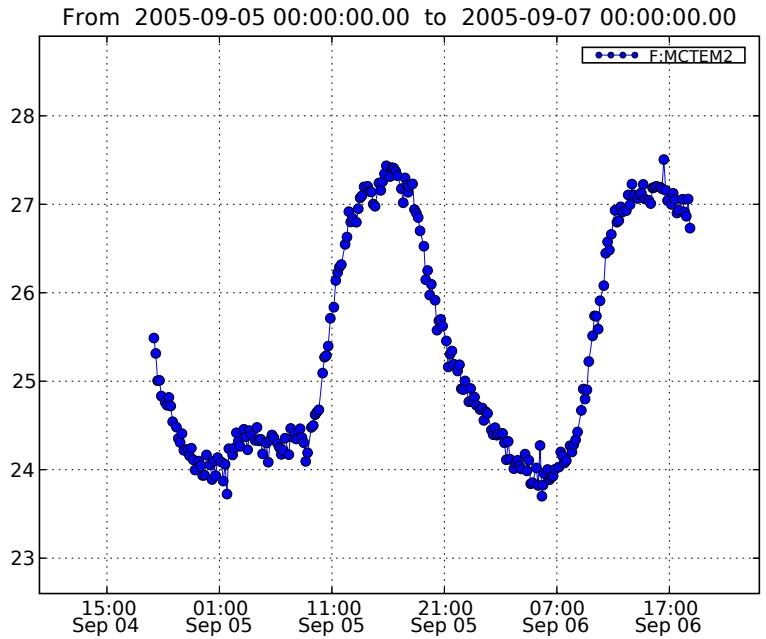
Try to make it more smoothly: $t^o_{use} = t^o_{prev} + (t^o_{new} - t^o_{prev})/5$, where t^o_{new} = fTempThisEvent

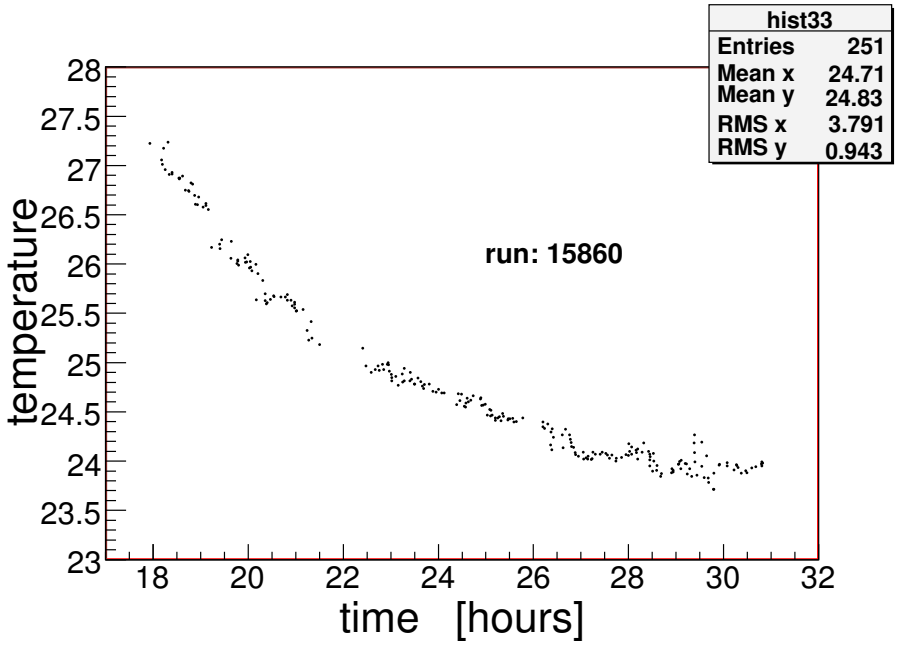
corrected time: time = time - (t^o_{use} - t^o_{ave})*TF, where TF is a temperature factor, t^o_{ave} is an average temperature = 26^o

TempFactor for run 15860: top - 3.6/9.0 ns/1^{o}C and bottom - 4.2/9.0 ns/1^{o}C

TempFactor for runs 14130-14300: top - 5.4/9.0 ns/1^{o}C and bottom - 5.8/9.0 ns/1^{o}C

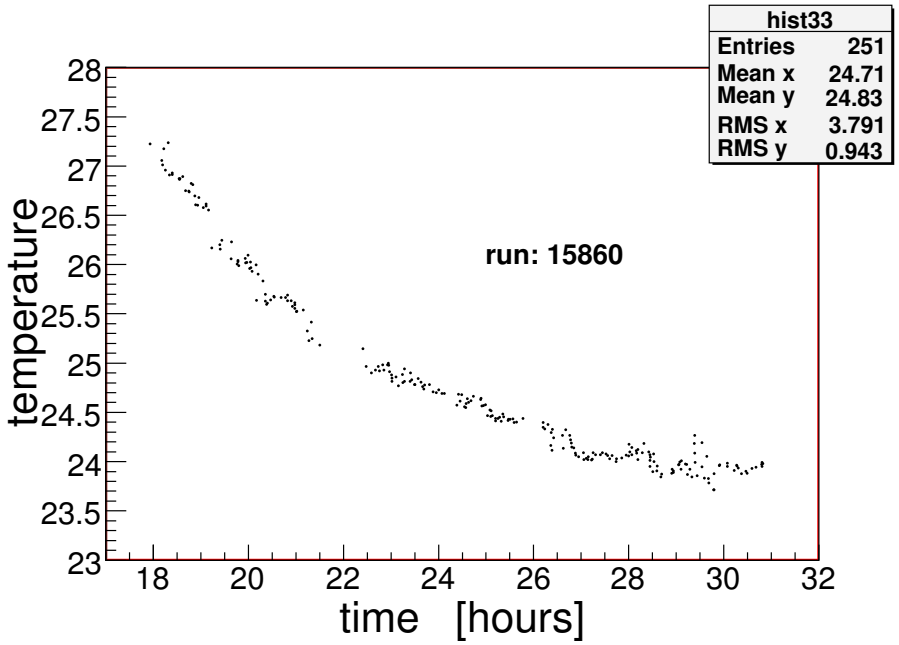
Temperature probe for run 15860

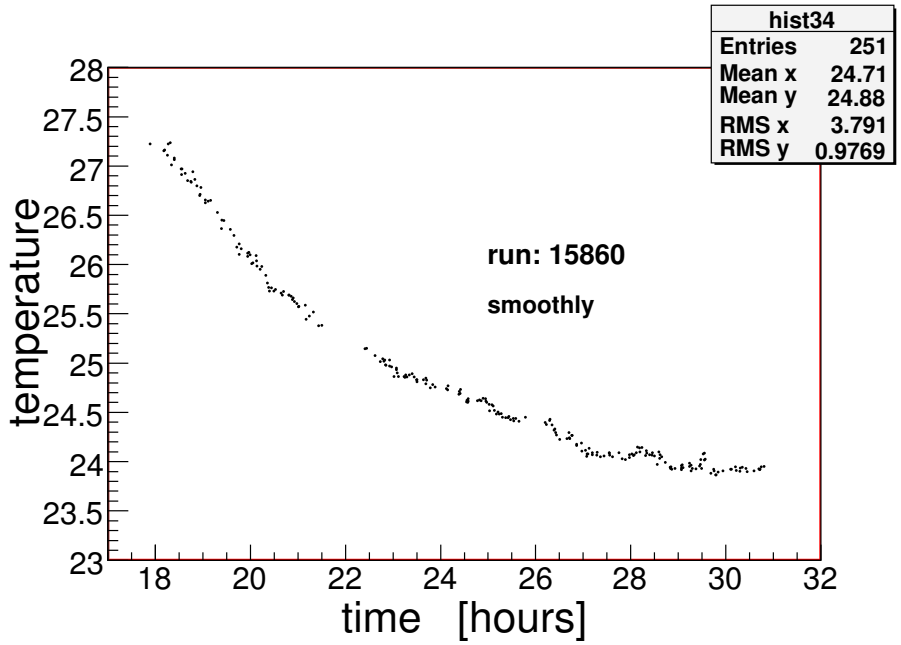




Temperature probe readings from slowmon (on left) and from DST data (on right). Run started at 18:00 September 5th and ends at 7:00AM at September 6th 2005

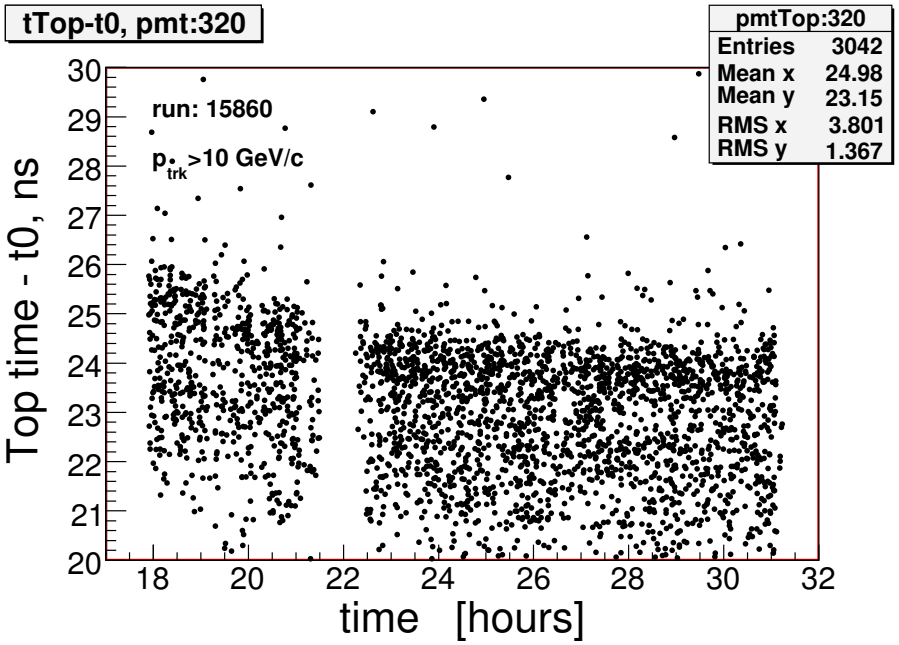
Temperature probe for run 15860, cont

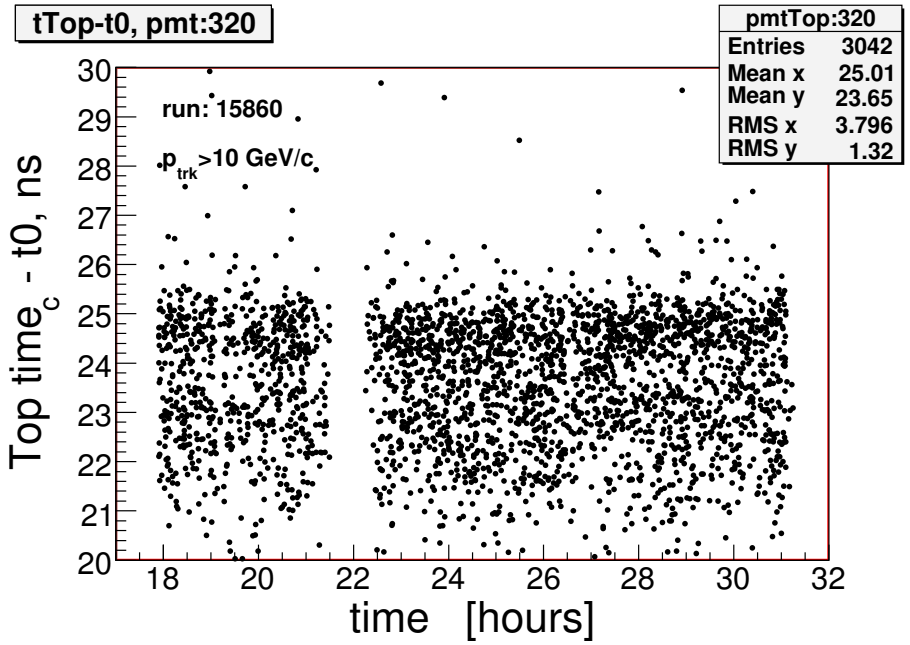




Temperature probe readings from DST data as it is (on left) and after making smoothly (on right).

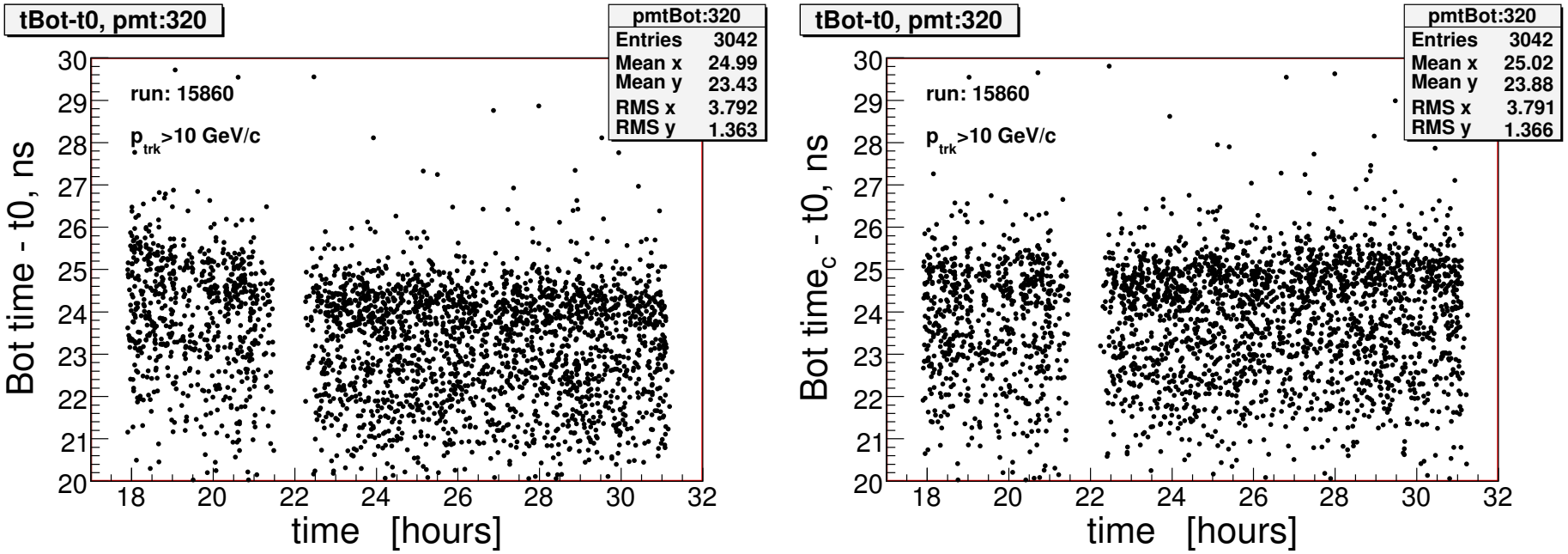
Top pmt (bar 320), run 15860





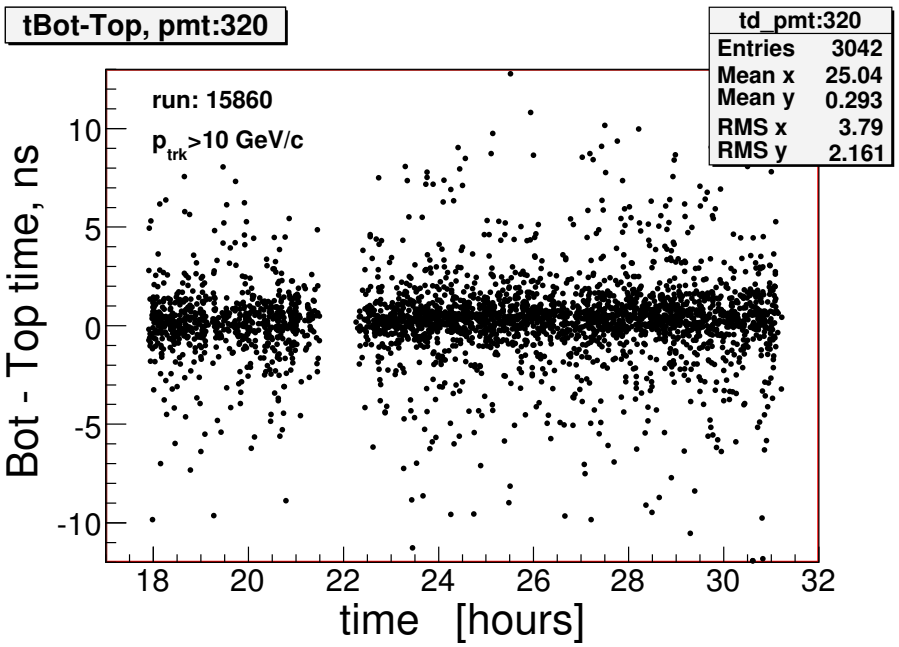
Top pmt time distributions before the temperature correction (on left) and after correction (on right).

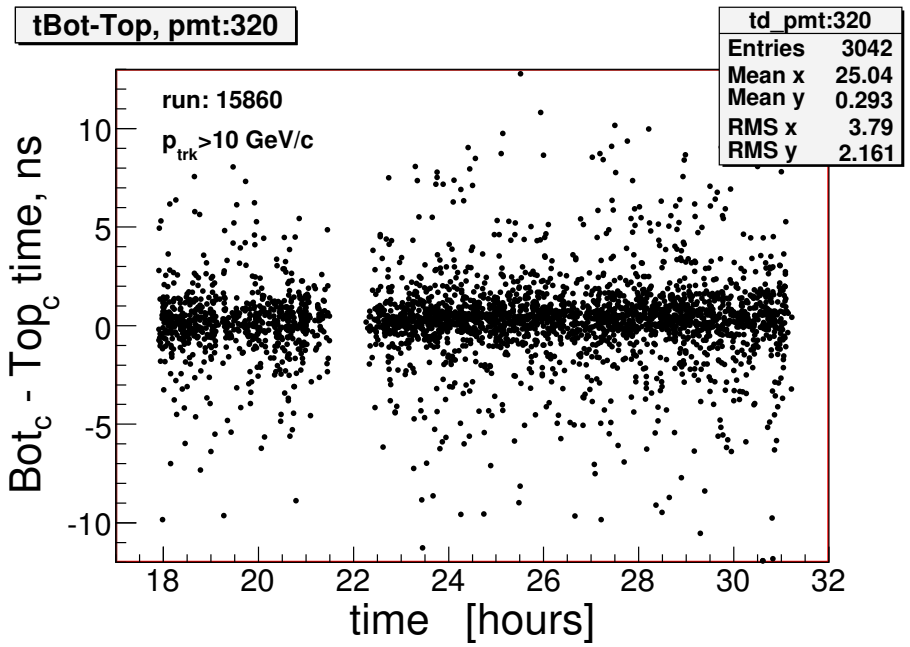
Bottom pmt (bar 320), run 15860



Bottom pmt time distributions before the temperature correction (on left) and after correction (on right).

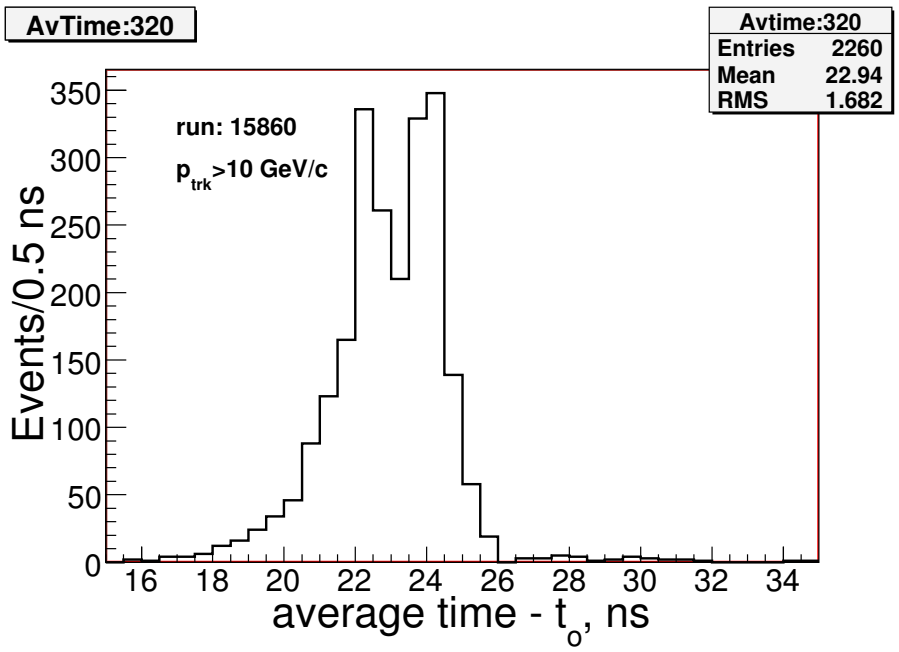
Bottom - Top difference (bar 320), run 15860

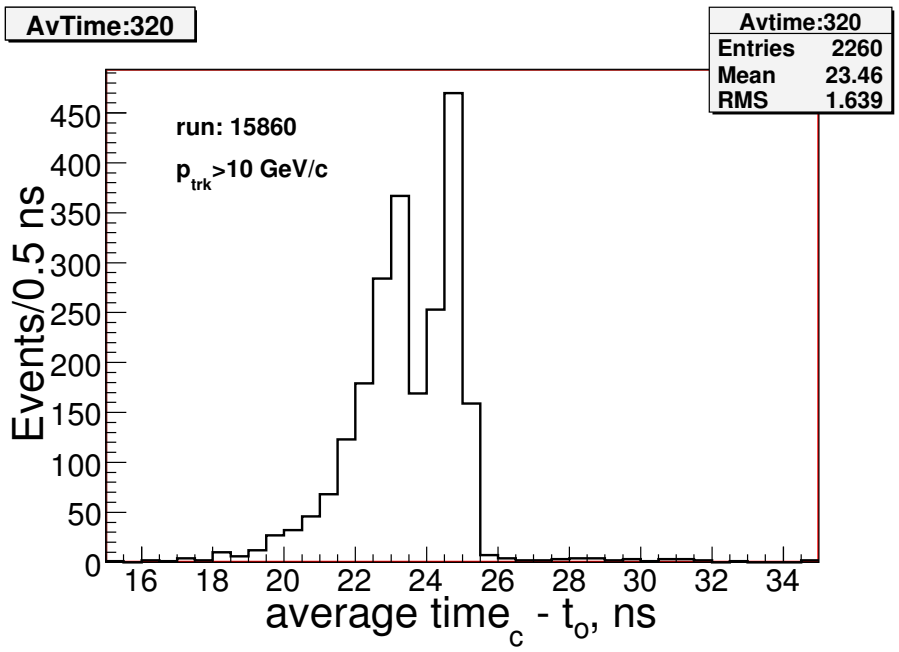




Bottom - Top time difference distributions before the temperature correction (on left) and after correction (on right).

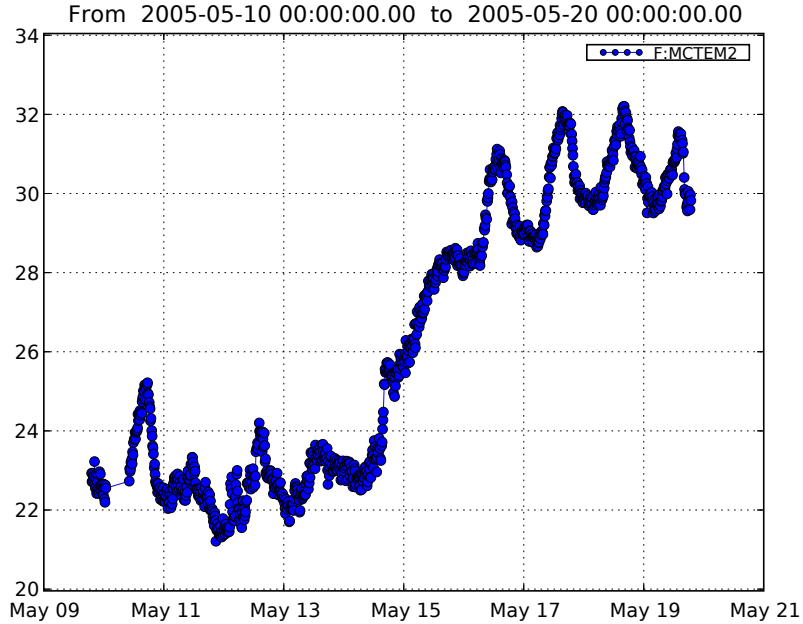
Average time (bar 320), run 15860

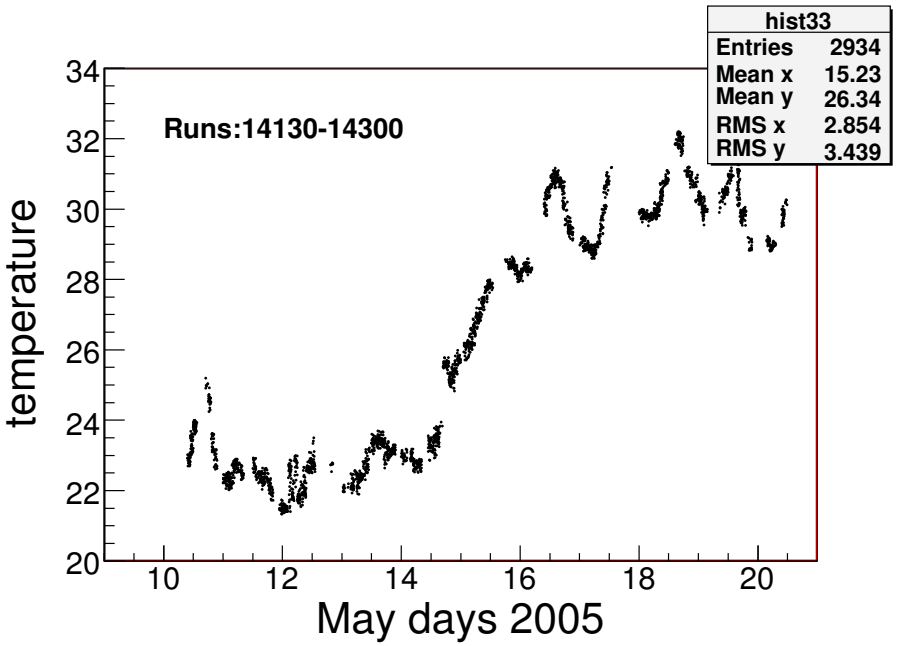




The average time distributions before the temperature correction (on left) and after correction (on right).

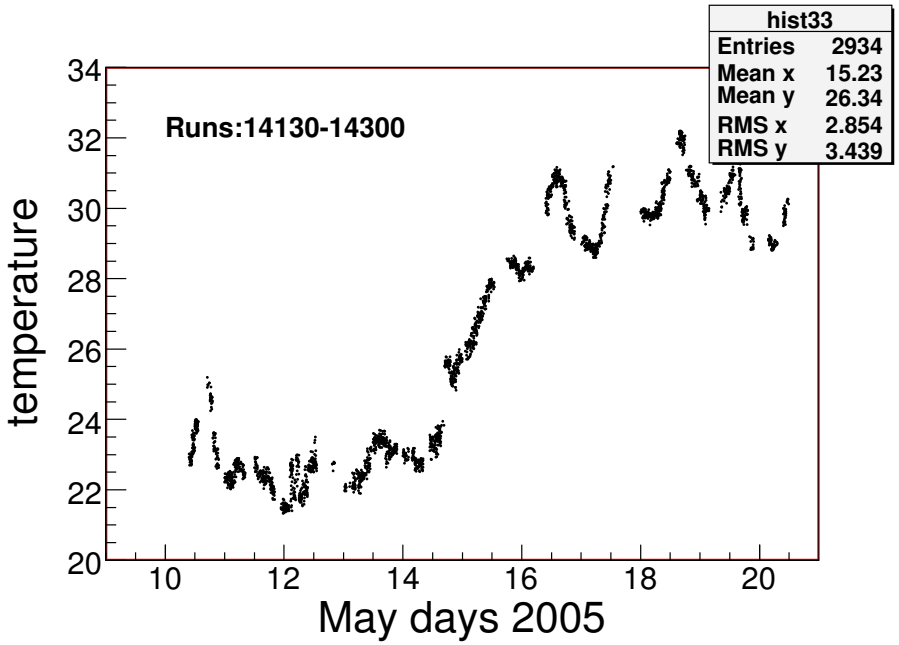
Temperature probe for May days 2005

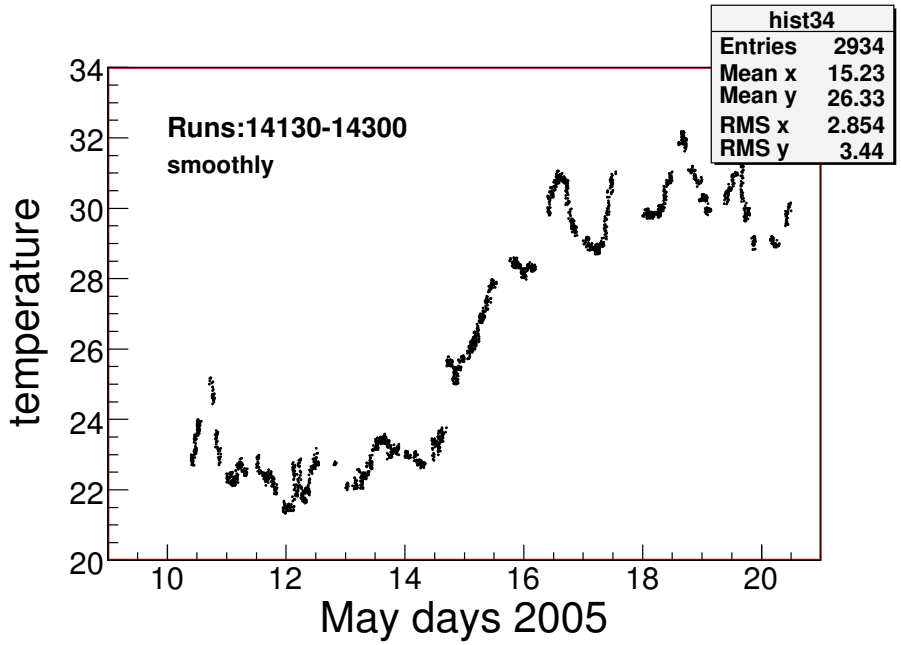




Temperature probe readings from slowmon (on left) and from DST data (on right).

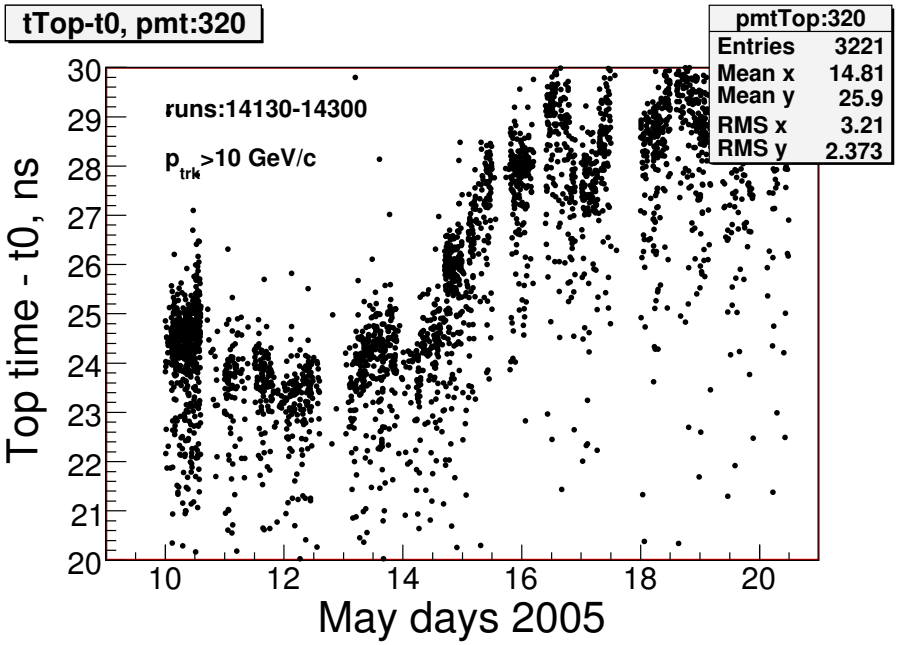
Temperature probe for May days 2005, cont

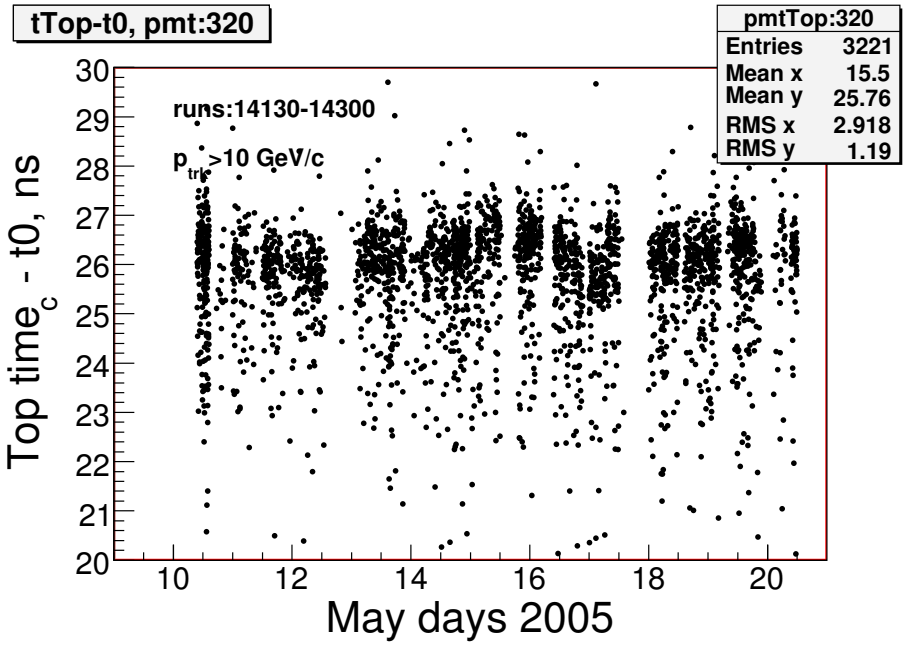




Temperature probe readings from DST data as it is (on left) and after making smoothly (on right).

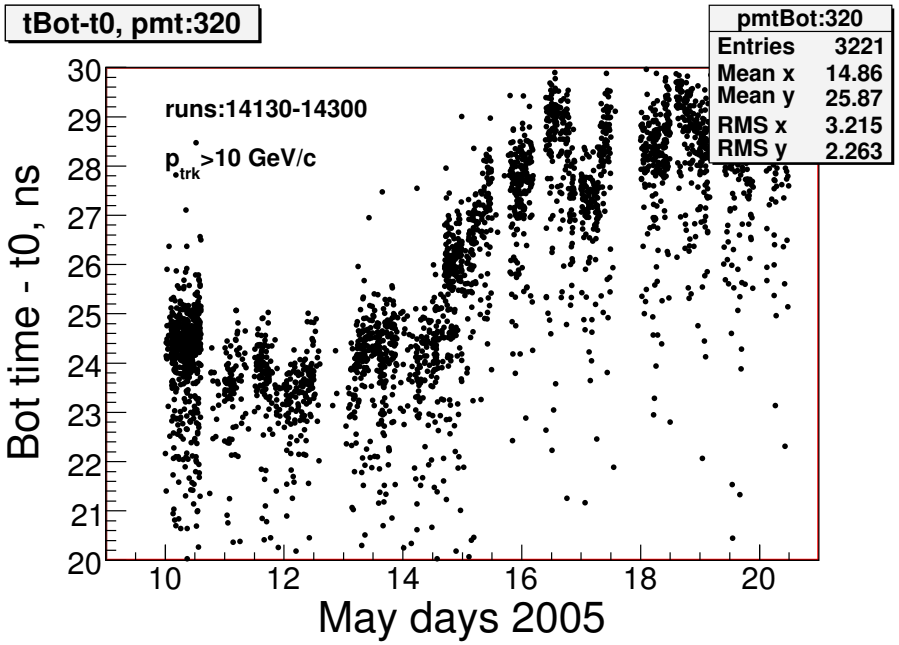
Top pmt (bar 320), runs:14130-14300

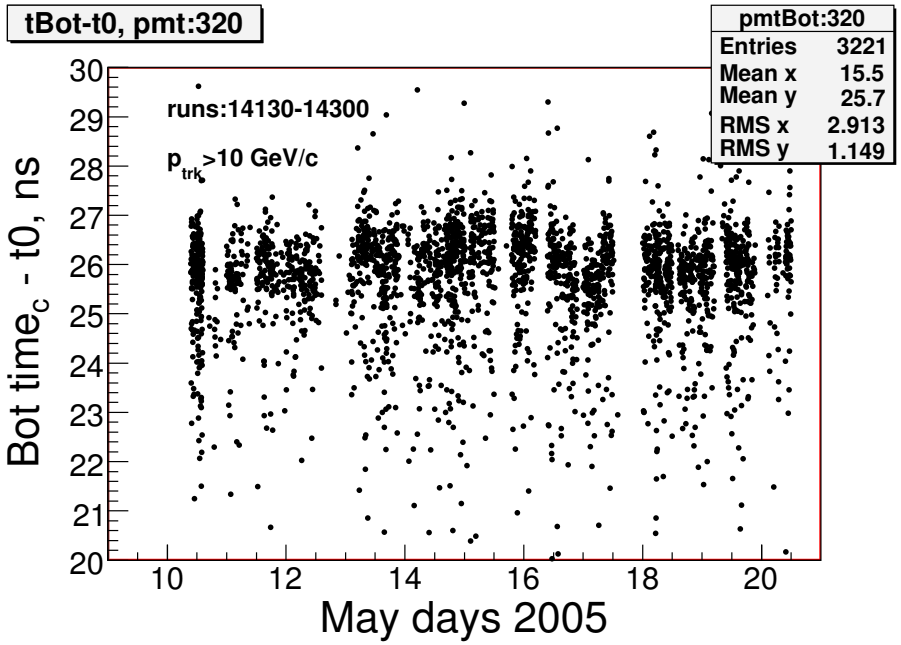




Top pmt time distributions before the temperature correction (on left) and after correction (on right).

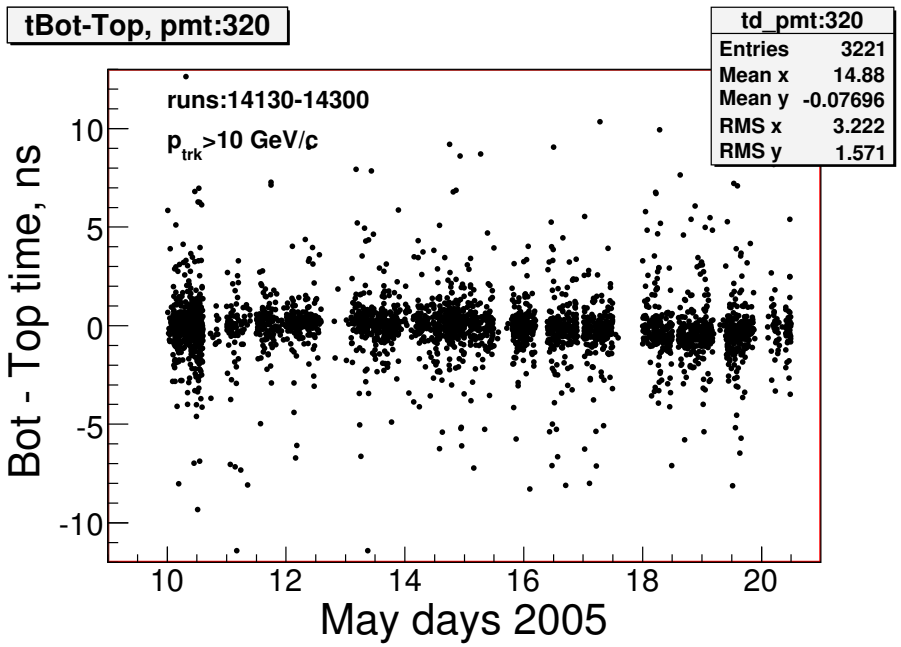
Bottom pmt (bar 320), runs:14130-14300

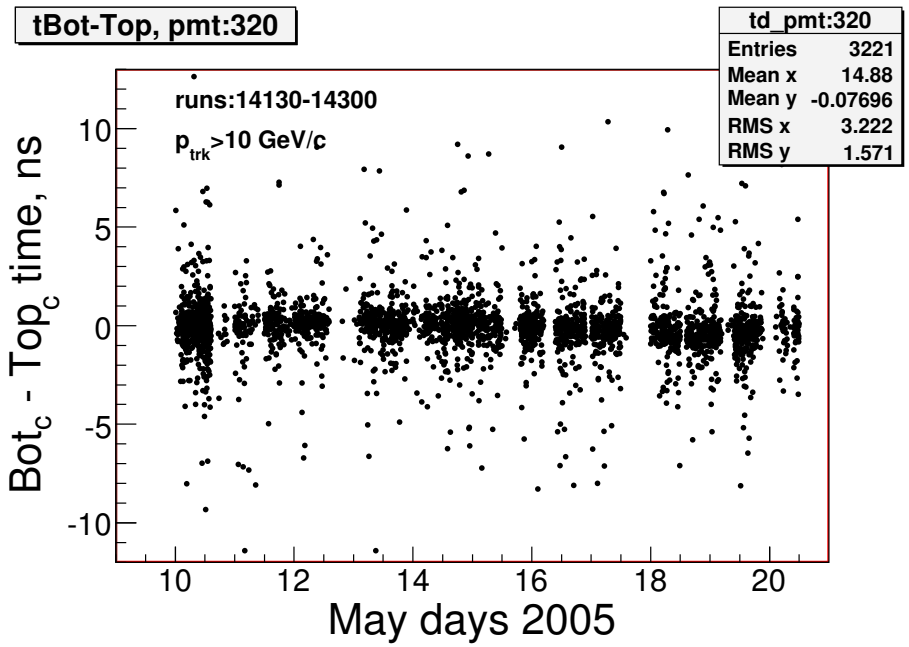




Bottom pmt time distributions before the temperature correction (on left) and after correction (on right).

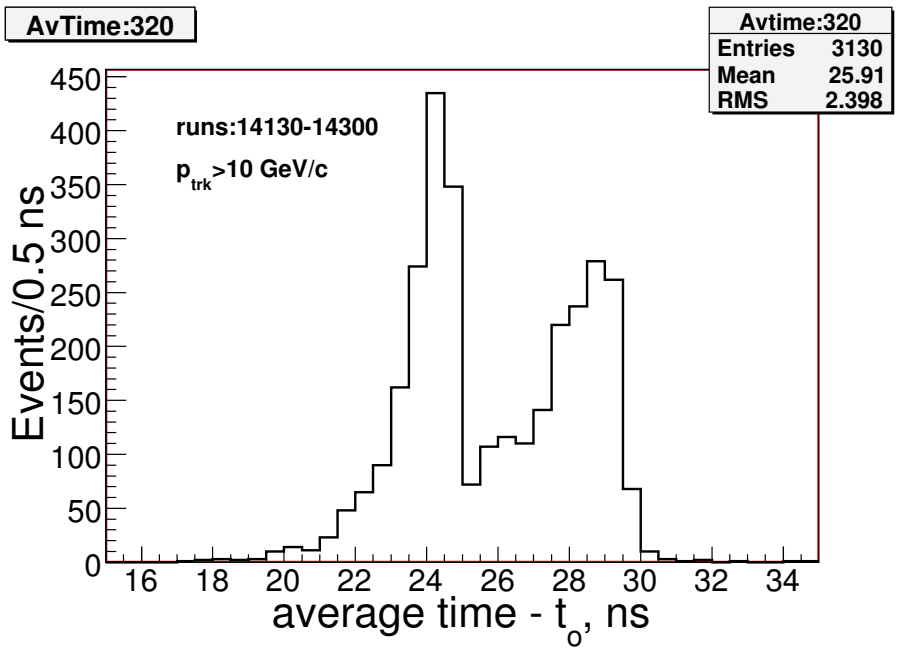
Bottom - Top difference (bar 320), runs:14130-14300

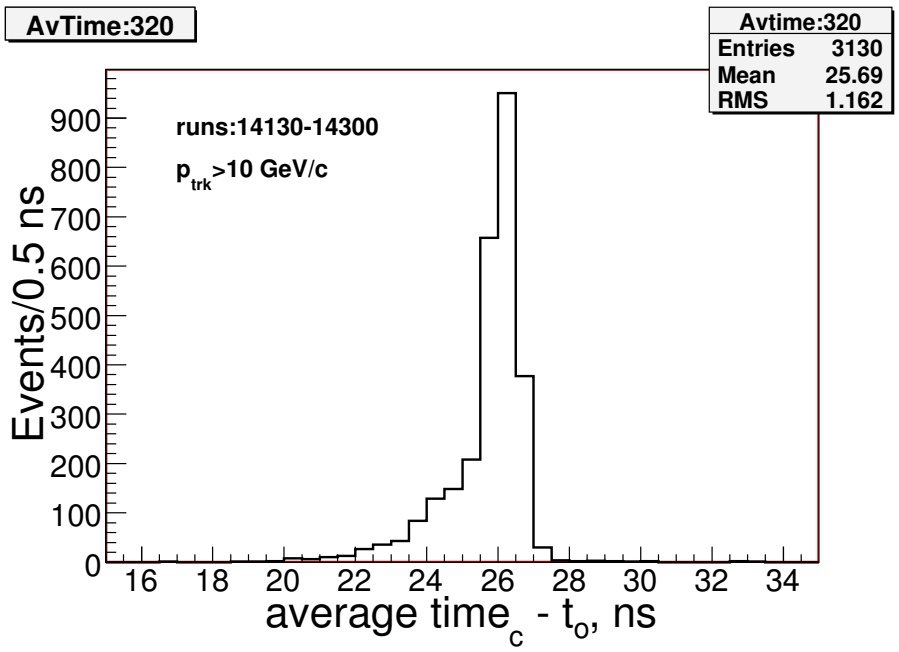




Bottom - Top time difference distributions before the temperature correction (on left) and after correction (on right).

Average time (bar 320), runs:14130-14300





The average time distributions before the temperature correction (on left) and after correction (on right).