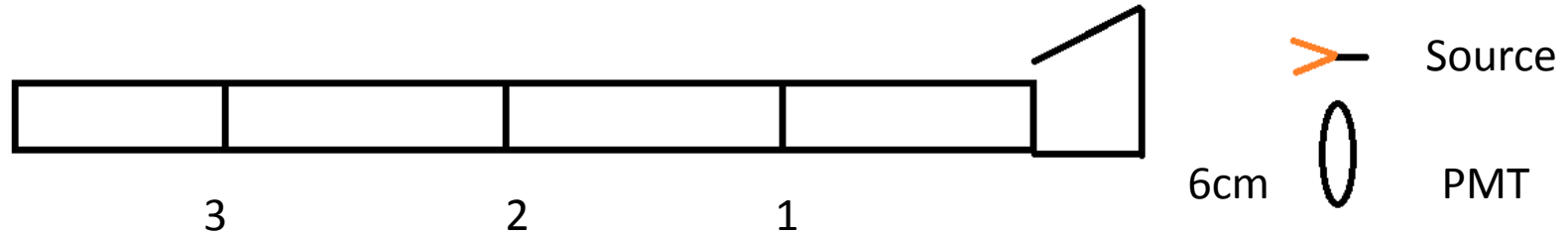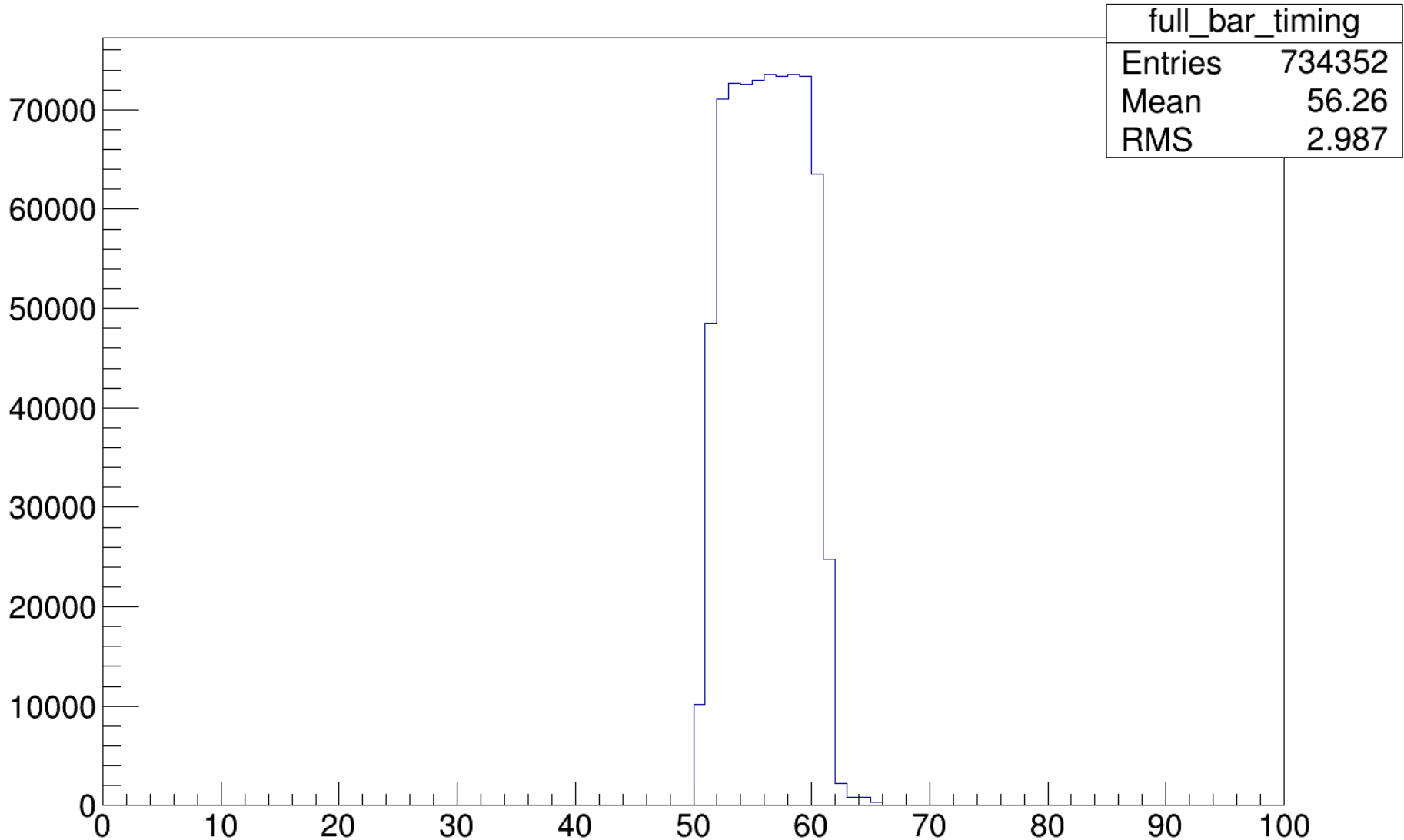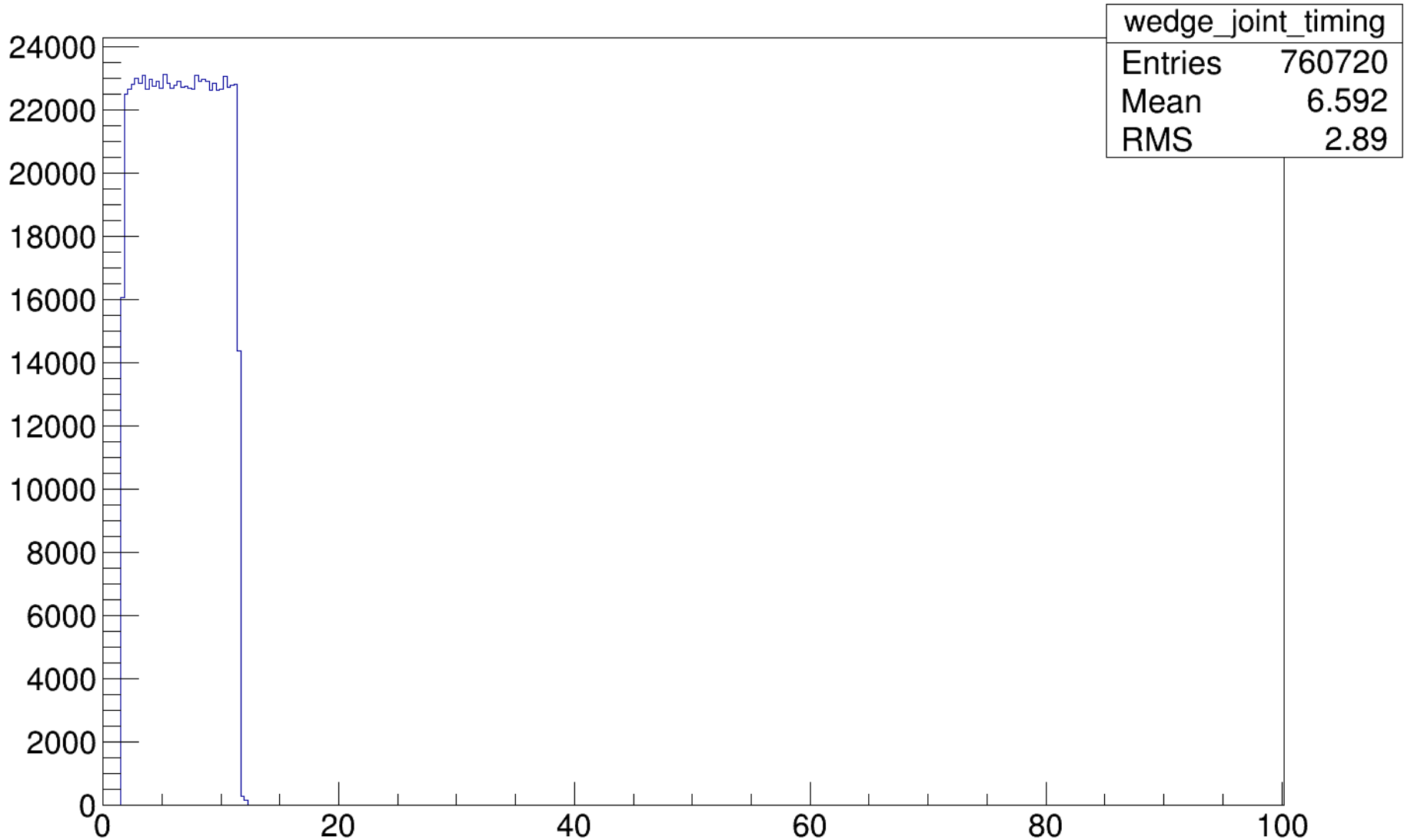# Preliminary Bar timing

Schematic of Geometry

- Just used one bar
- Photons hitting wedge in the configuration will not totally internally reflect
- Photons hitting other bars will have very different timing profiles, but make up a much smaller solid angle of the PMT
- Photons emitted in 10ns pulse
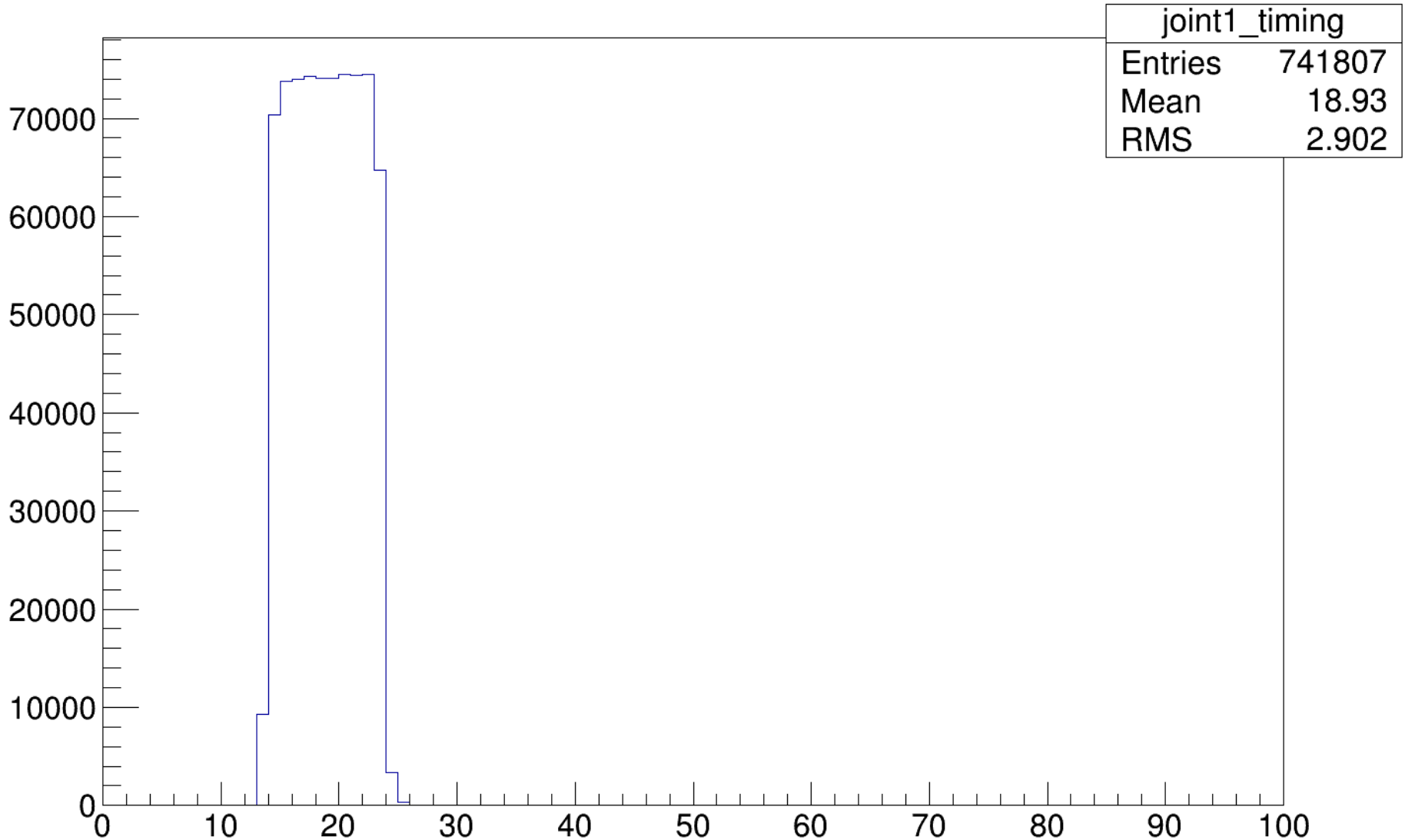- This is all very preliminary – have not done much cross checking

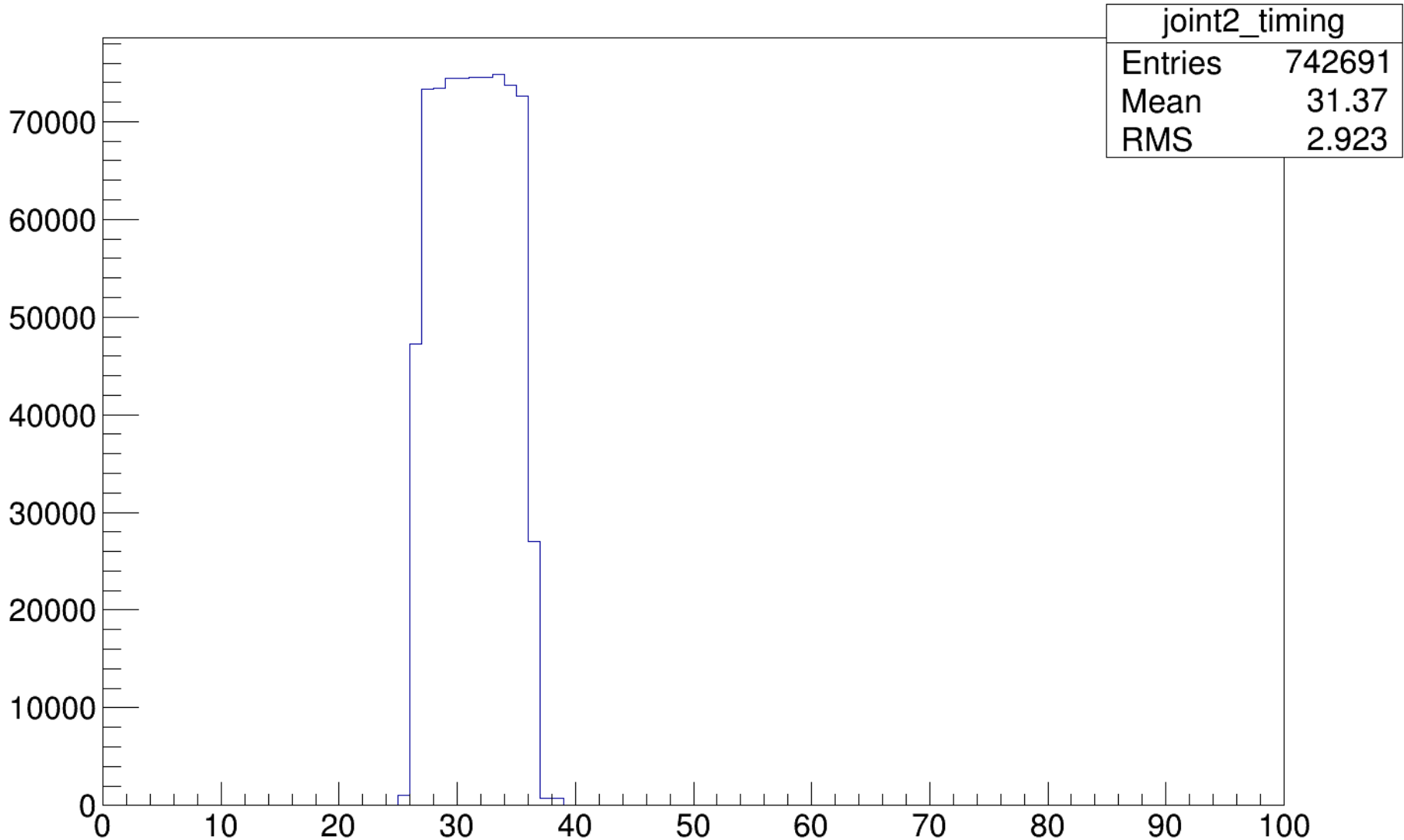# Timing for full bar

Timing for Wedge Joint

wedge_joint_timing	
Entries	760720
Mean	6.592
RMS	2.89

Timing for Joint 1

joint1_timing	
Entries	741807
Mean	18.93
RMS	2.902

Timing for Joint 2

joint2_timing	
Entries	742691
Mean	31.37
RMS	2.923

Timing for Joint 3

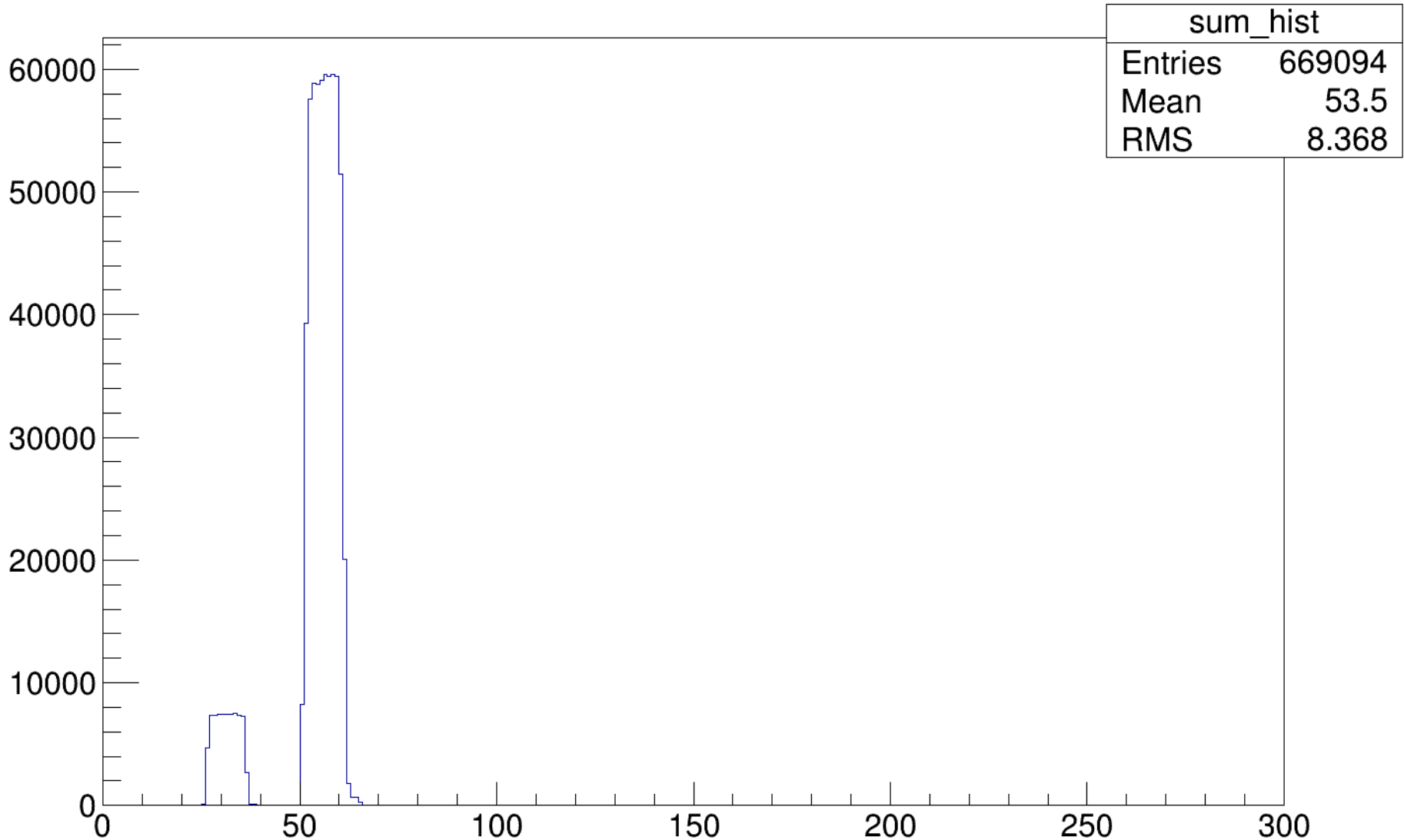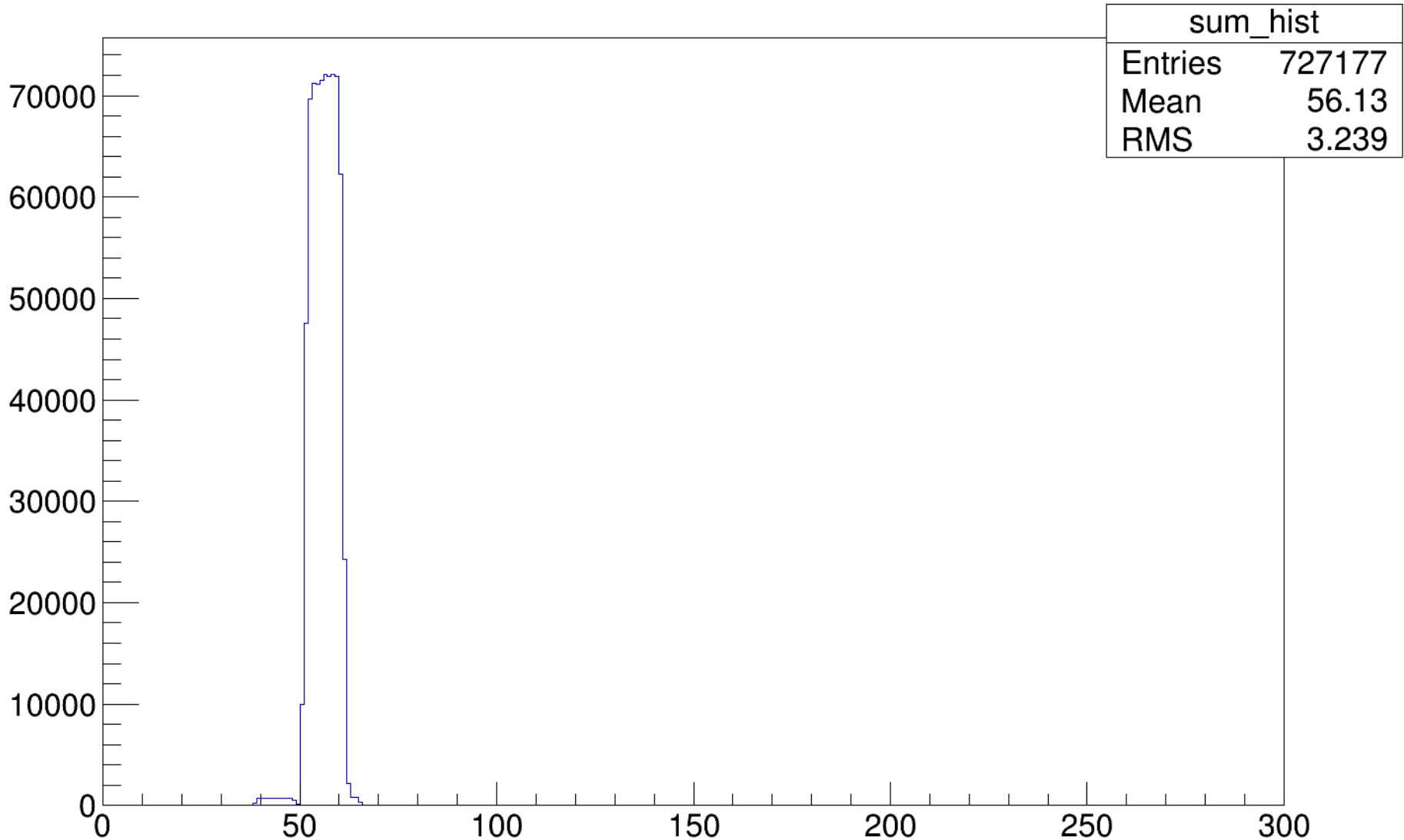| joint3_timing	
Entries	743858
Mean	43.81
RMS	2.955
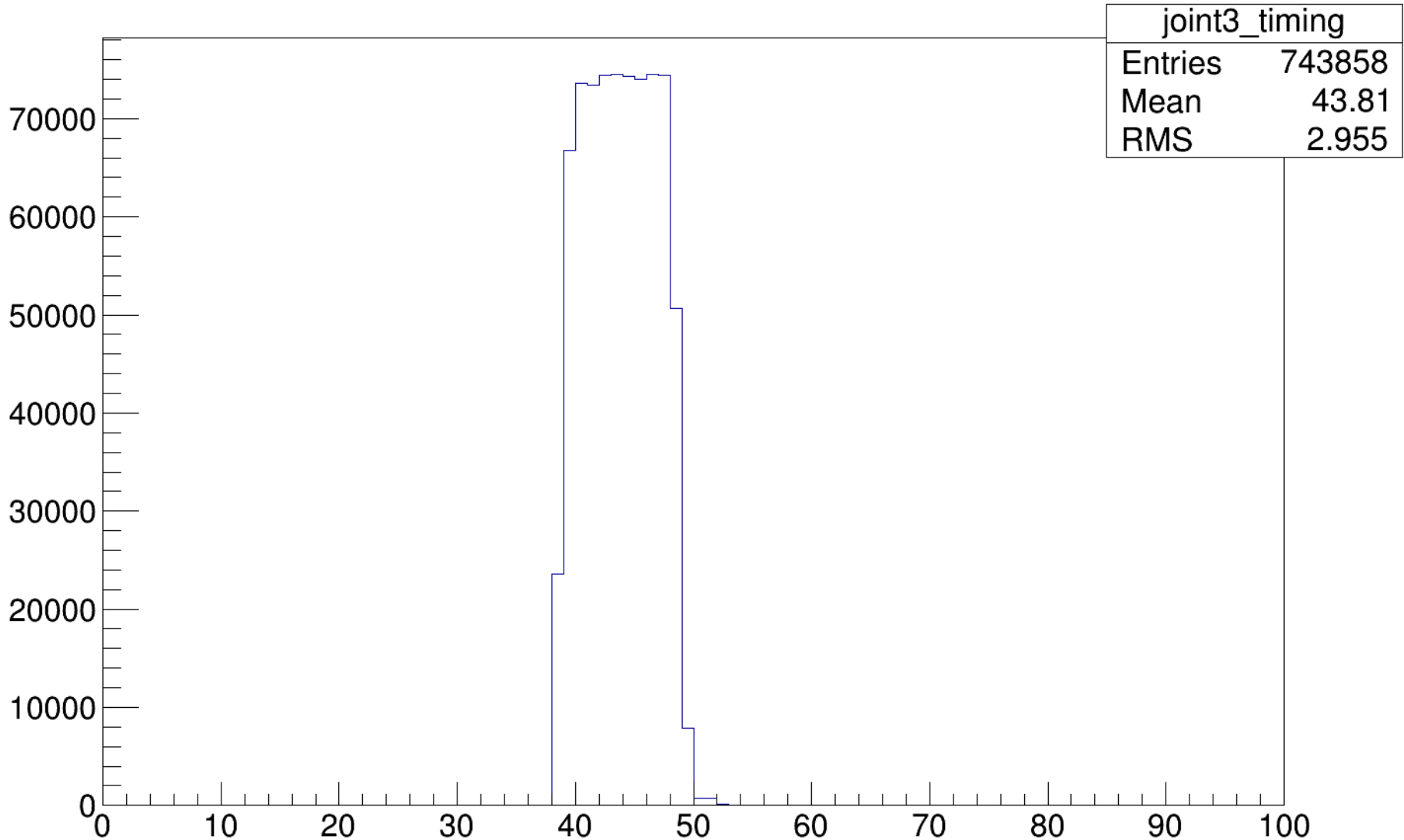
Reflections

- Are just linear combinations of the full spectrum and the ones for the joints
  - Light hits uniformly through bar cross section
- Full spectrum gets cut twice (down and back)

Timing for 10% reflectivity at Joint 2

sum_hist	
Entries	669094
Mean	53.5
RMS	8.368

Timing for 1% reflectivity at Joint 3

sum_hist	
Entries	727177
Mean	56.13
RMS	3.239

Conclusion

- We'll need pretty fast/bright PMTs or a clever geometry
- We probably have to run the PMT's in current mode to see the lesser breaks

- I am still in favor of a camera + time lapse movie