Muon Lifetime Pre-Lab

1. Read Melissinos chapters 3.3, 3.4, 8.4, 9.4

2. Read the muon experiment Guide.

3. Explain why if muons have a mean lifetime of about 2 microseconds, that muons generated at the top of the atmosphere are detected in your scintillator.

4. Estimate the number of muons <50MeV hitting your scintillator detector each second.

5. Using information in the Guide, estimate the number of muon stops per second in your detector.

6. Why is the pulse from your phototube for muon decay event smaller than those for the muon stop?

7. Why can't you use tee connections in your pulse timing logic?

8. Why create a delayed version of the detected pulse? What effect does this necessary delay of the start pulse and the consequent loss of short-lived events have on the mean life measurement? Must you correct for it?