

Abstract Submitted  
for the SES08 Meeting of  
The American Physical Society

**Randoms Counter Analysis**<sup>1</sup> WINSTON HENSLEY, KEVIN GIOVANETTI, James Madison University, MULAN COLLABORATION — A 1 ppm precision measurement of the muon lifetime is being conducted by the MULAN collaboration. The reason for this new measurement lies in recent advances in theory that have reduced the uncertainty in calculating the Fermi Coupling Constant from the measured lifetime to a few tenths ppm. The largest uncertainty is now experimental. To achieve a 1ppm level of precision it is necessary to control all sources of systematic error and to understand their influences on the lifetime measurement. James Madison University is contributing by examine the response of the timing system to uncorrelated events, randoms. A radioactive source was placed in front of paired detectors similar to those in the main experiment. These detectors were integrated in an identical fashion into the data acquisition and measurement system and data from these detectors was recorded during the entire experiment. The pair were placed in a shielded enclosure away from the main experiment to minimize interference. The data from these detectors should have a flat time spectrum as the decay of a radioactive source is a random event and has no time correlation. Thus the spectrum can be used as an important diagnostic in studying the method of determining event times and timing system performance.

<sup>1</sup>National Science Foundation Grant

Winston Hensley  
James Madison University

Date submitted: 19 Aug 2008

Electronic form version 1.4