

Abstract Submitted  
for the NWS09 Meeting of  
The American Physical Society

**Probing the Neutrino Mass Hierarchy**<sup>1</sup> LAURA BODINE, R.G. HAMISH ROBERTSON, University of Washington — The field of neutrino physics is beginning to address many questions posed by previous experiments. Current and next generation experiments will examine the value of  $\theta_{13}$ , the absolute neutrino mass scale and the nature of massive neutrinos. Yet, even in the wake of these developments, the neutrino mass hierarchy remains unknown. The most promising proposed method for determining the neutrino mass hierarchy, namely the use of matter enhancement, critically relies on a non-vanishing  $\theta_{13}$ . We discuss the prospects of examining  $\nu_\mu$  disappearance over a very long baseline (for example: FNAL to the South Pole) as an alternative method that remains feasible even in the limit of a vanishing  $\theta_{13}$ .

<sup>1</sup>This work is supported by DOE grant DE-FG02-97ER41020.

Laura Bodine  
University of Washington

Date submitted: 17 Apr 2009

Electronic form version 1.4