

Abstract Submitted  
for the APR13 Meeting of  
The American Physical Society

**Determination of the ground state branching ratio in  $^{14}\text{O} \rightarrow ^{14}\text{N}$  beta decay**<sup>1</sup> PAUL VOYTAS, ELIZABETH GEORGE, Wittenberg University, LYNN KNUTSON, University of Wisconsin-Madison, GREGORY SEVERIN, Riso National Laboratory for Sustainable Energy — The branching ratio of the  $^{14}\text{O} \rightarrow ^{14}\text{N}$  beta decay is an important ingredient in analyses that use  $0^+ \rightarrow 0^+$  superallowed beta decays to test the unitarity of the CKM matrix. In addition to the dominant  $0^+ \rightarrow 0^+$  transition in this decay, there is a small  $0^+ \rightarrow 1^+$  branch to the ground state. A reanalysis by Towner and Hardy of previous ground state branching ratio measurements shifted the recommended value of the ground state branching ratio by several error bars and also indicates that the two most precise previous measurements are not in good agreement with each other. The ground state branch is about 0.5% and should be measured to a relative uncertainty of about 10% to minimize the error contribution from this parameter. We will present new measurements of the beta spectra for the ground state and first excited state branches in  $^{14}\text{O}$  beta decay and discuss the implications for the ground state branching ratio.

<sup>1</sup>Work supported in part by NSF grant 0855514

Paul Voytas  
Wittenberg University

Date submitted: 11 Jan 2013

Electronic form version 1.4