

Abstract Submitted  
for the DNP11 Meeting of  
The American Physical Society

**High Precision Determination of the  ${}^6\text{He}$  Half-life<sup>1</sup>** A. KNECHT, B.G. DELBRIDGE, A. GARCIA, G.C. HARPER, R. HONG, R.G.H. ROBERTSON, H.E. SWANSON, S. UTSUNO, D.I. WILL, C. WREDE, D.W. ZUMWALT, University of Washington, P. MUELLER, W. WILL, Argonne National Laboratory — We performed a high precision measurement of the half-life of  ${}^6\text{He}$ . The motivation for this experiment lied not only in resolving a long-standing discrepancy between the previous most precise measured values of  $806.7 \pm 1.5$  ms and  $798.1 \pm 1$  ms, respectively, but also in serving as a solid basis for the extraction of the axial coupling constant  $g_A$  by comparing the result to ab initio calculations. The measurement took place at the tandem accelerator of the Center for Experimental Nuclear Physics and Astrophysics of the University of Washington where we used the  ${}^7\text{Li}({}^2\text{H}, {}^3\text{He}){}^6\text{He}$  reaction to produce  ${}^6\text{He}$ . We impinge a  $10 \mu\text{A}$ , 18 MeV deuteron beam on a liquid lithium target station that delivers  $\sim 10^9$  atoms/s to a low-background experimental area. Here we present the design of the lithium target station and the results of the  ${}^6\text{He}$  half-life determination.

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

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Date submitted: 01 Jul 2011

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