Abstract Submitted
for the TS4CF08 Meeting of
The American Physical Society

Computational Analysis of the Decay Constant of $^7Be^+$ and $^7BeH^+$ MARK HUTCHISON, BRYAN PETERSON, BYU — ^{7}Be is the lightest element that decays solely by electron capture. ^{7}Be is therefore a prime candidate for exploring the nature of electron capture. Despite the long history of research done on ^{7}Be, there is no accepted value for its half-life. All other measurements of the half-life of ^{7}Be have been performed by inserting it interstitially into other elements. By confining singly ionized ^{7}Be atoms in a non-neutral plasma, we can obtain a measurement for its decay constant with a known fraction of 2s electrons. Since we will not need to worry about approximations due to interactions with other elements, our measurement may be important in confirming the work done by P. Das and A. Ray [1]. I will be presenting about our current efforts in calculating a predictive value for the change in the decay constant for singly ionized ^{7}Be by calculating the electron charge density near the nucleus. I will also present how we can use the wave functions for Hydrogenic ions as an important check for our calculations and show some of our preliminary findings. [1] Das, P., and Ray, A., "Terrestrial ^{7}Be decay rate and ^{8}B solar neutrino flux," Phys. Rev. C **71**, 025801 (2005).

Mark Hutchison
BYU

Date submitted: 22 Sep 2008 Electronic form version 1.4