

Abstract Submitted
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Characterization of a non-neutral ion trap for the determination of the half-life of ionized ${}^7\text{Be}$ BRYAN G. PETERSON, DANIEL ERICKSON, CHAD WILLIAMS, GRANT W. HART, Brigham Young University — We have constructed a non-neutral ion trap in order to measure the rate of decay of singly-ionized ${}^7\text{Be}$. ${}^7\text{Be}$ is the lightest isotope that decays exclusively by electron capture. Because any of the electrons can be captured in the decay, the removal of any of the four electrons can measurably affect the rate. In addition, the decay of this isotope is generally measured with the atom embedded in some other material so the actual electron configuration is not well known whereas the ions in the plasma will have a well-defined configuration. We are using a boron carbide plasma to characterize the operation of the trap. This provides a plasma with ion masses that are comparable to that of ${}^7\text{Be}$ as well as providing three different masses (78% ${}^{10}\text{B}$, 20% ${}^{12}\text{C}$, 2% ${}^{11}\text{B}$). This will allow us to evaluate the resolution and sensitivity of the Fourier Transform Ion Cyclotron Resonance Mass Spectrometry technique that will be used to monitor the rate of conversion of ${}^7\text{Be}$ to ${}^7\text{Li}$. The status and results of this characterization will be presented.

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