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Modeling the FTICR-MS signal of a ^7Be Ion Plasma M. TAKESHI NAKATA, GRANT W. HART, BRYAN G. PETERSON, ROSS L. SPENCER, Brigham Young University — Beryllium-7 (^7Be) decays only by electron capture into Lithium-7 (^7Li) with a half life of 53 days. As a result, changing its electronic structure will affect its decay rate. We desire to study the effect of ionization on its decay rate. We will do this by trapping a ^7Be ion plasma in a Malmberg-Penning Trap and measuring its and ^7Li 's concentration as a function of time by using Fourier transform ion cyclotron resonance mass spectrometry (FTICR-MS). We use this ratio as a function of time to directly measure the decay rate of the confined ion plasma rather than using gamma detection. We have modeled these signals in a 2-dimensional electrostatic particle-in-cell (PIC) code. The two spectrum peaks coalesce at high densities and at low densities they can be resolved. We also plan to model $^7\text{BeH}^+$ and ^7Li at high densities to see if we can differentiate between them. The preliminary results of these investigations will be presented.

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