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**Modeling the FTICR-MS signal of a  ${}^7\text{Be}$  Ion Plasma using a 2D PIC code** M. TAKESHI NAKATA, GRANT W. HART, BRYAN G. PETERSON, Brigham Young University — Beryllium-7 ( ${}^7\text{Be}$ ) decays only by electron capture into Lithium-7 ( ${}^7\text{Li}$ ) 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  ${}^7\text{Be}$  ion plasma in a Malmberg-Penning Trap and measuring its and  ${}^7\text{Li}$ '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. Since  ${}^7\text{Be}$  and  ${}^7\text{Li}$  ion cyclotron frequencies are very close and these signals are not well understood in the plasma regime, we will model them in an electrostatic particle-in-cell (PIC) code. This simulation will be in two dimensions on a rectangular grid with a circular boundary. The progress of this investigation will be presented.

M. Takeshi Nakata  
Brigham Young University

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