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RF Trapping and Mass Spectrometry with Low Mass Ions¹ ROBERT THOMPSON, JEREMIE CHOQUETTE, DANIEL FOSTER, University of Calgary — Low mass ions, or more specifically ions with a low mass to charge ratio, are of extensive interest for high resolution study as their simple electronic structure and strong interaction with electromagnetic fields make them ideal practical systems for study of a range of theoretical models. However, the low mass of these species can make for added complications, especially in traps designed to hold a range of ion masses, due to the fact that low mass-to-charge ratios tend to correlate with high stability parameter (the so-called q-factor) values. This presentation will focus on recent work examining two topics: (1) an alternate ion-trap mass spectrometry technique, the so-called q-scan mass spectrometry, that has advantages with low mass ions; and (2) a practical hole just below q = 0.908 in the nominal ion trapping stability region for a linear Paul trap. Both experimental and computational / theoretical results for each project will be presented.

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