First direct measurement of $^{23}\text{Mg}(p,\gamma)^{24}\text{Al}$ with DRAGON L. ERIKSON, Colorado School of Mines; DRAGON COLLABORATION — During explosive nucleosynthesis, the $^{23}\text{Mg}(p,\gamma)^{24}\text{Al}$ capture reaction may function as a breakout from the NeNa to the MgAl cycles. Depending on the resonance strength and energy, such a breakout could substantially affect the production of $^{26}\text{Al}$ and $^{22}\text{Na}$ which have been detected by orbital satellite. This important reaction was directly studied at astrophysically relevant energies ($E_{\text{lab}} \approx 490$ keV/u) by the DRAGON collaboration during the summer and fall of 2008. However, due to limitations of the ISAC facility, the experiment was complicated by a $^{23}\text{Na}$ contamination ranging from 2 to 5000 times more intense than the $^{23}\text{Mg}$ component. To compensate, a new local time-of-flight system and a multi-segmented ion chamber were used for particle identification. This talk will present and discuss some details of the experiment and the results to date.

Luke Erikson
Colorado School of Mines

Date submitted: 27 Apr 2009

Electronic form version 1.4