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Spectroscopy with Cold, Trapped Ions KEVIN FERRI, JEREMY GLICK, JACLYN SCHMITT, JOSHUA HANSON, JOAN MARLER, Clemson University — At temperatures 5 orders of magnitude less than room temperature, individual ions and ensembles of ions can be studied and manipulated with an unprecedented level of control. To achieve these temperatures ions are isolated in an rf-trap and laser-cooled to temperatures in which their internal states can be measured, set and switched at the individual ion level. Two apparatuses optimized for the study of single charged and highly charged ions are being developed. Singly charged atomic and molecular ions in rf traps will be used to study the dynamics of state to state chemical reactions and chemistry relevant to astrophysical systems. Highly charged ions from the Clemson University EBIT (Electron Beam Ion Trap) will be used to probe atomic systems under the conditions of extreme electric fields. This poster will present an update on the experimental progress on these two apparatuses.

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