

1116-VC-1805      **Meredith McCormack-Mager\***, mmccorm2@wellesley.edu, and **Carlos Muñoz** and **Zev Woodstock**. *Efficiently Testing Thermodynamic Compliance of Chemical Reaction Networks*.

Current algorithms for checking whether a chemical reaction network obeys the second law of thermodynamics are slow. This talk will demonstrate that using matroids to test thermodynamic feasibility is always exponential in the worst case. In joint work with Zev Woodstock and Carlos Munoz, I introduce a new algorithm, based on linear programming, for determining thermodynamic feasibility of chemical reaction networks. This method runs in polynomial time, and promises to improve in complexity as interior point methods are further refined. (Received September 21, 2015)