## Sonja Hohloch, Silvia Sabatini, Daniele Sepe and Margaret Symington\* (symington\_mf@mercer.edu). Beyond toric blow-ups.

Blowing up and down is an important tool in the study of symplectic manifolds. In dimension four, equivariant blow-ups of symplectic four-manifolds equipped with a  $T^2$ -action or an  $S^1$ -action are well understood. In this talk I will describe a blow-up that respects an  $S^1 \times \mathbf{R}$ -action but no  $T^2$ -action. This blow-up can be "big" in the sense that given certain toric manifolds of dimension four, the exceptional sphere introduced may have greater area than can be achieved by a toric blow-up. I will discuss both topological and symplectic aspects of this blow-up, and explain how it can be implemented on certain completely integrable Hamiltonian systems with two degrees of freedom. (Received September 20, 2016)