JAKE LEVINSON, Simon Fraser University
Springer fibers and the Delta Conjecture at t=0

We introduce a family of varieties $Y_{n,\lambda,s}$ that we call the Δ-Springer varieties and that generalize the type A Springer fibers. We give an explicit presentation of the cohomology ring $H^*(Y_{n,\lambda,s})$ and show that it has an action of the symmetric group, generalizing the Springer action on the cohomology of a Springer fiber. In particular, the top cohomology group is an induced Specht module. The $\lambda = (1^k)$ case of this construction gives a compact geometric realization for the expression in the Delta Conjecture at $t = 0$. Finally, we generalize results of de Concini and Procesi on the scheme of diagonal nilpotent matrices by constructing an ind-variety $Y_{n,\lambda}$ whose cohomology ring is isomorphic to the coordinate ring of the scheme-theoretic intersection of an Eisenbud-Saltman rank variety and diagonal matrices.

This is joint work with Sean Griffin and Alex Woo.