Zachary Hamaker, Rebecca Patrias* (patri080@umn.edu), Oliver Pechenik and Nathan Williams. Doppelgängers: Bijections of Plane Partitions.

For $Y$ of type $B_n$, $H_3$, or $I_2(m)$, there exists a minuscule poset that is a “doppelgänger” of the positive root poset of $Y$–the two posets have the same number of linear extensions and the same number of plane partitions of each height $k$. Furthermore, for each such $Y$, there is a second minuscule poset whose upper half is the positive root poset of $Y$. Remarkably, these two facts are related.

In this talk, we synthesize a remark of R. Proctor, M. Haiman’s rectification bijection, and minuscule $K$-theoretic Schubert calculus techniques of H. Thomas and A. Yong to give a uniform framework for combinatorial proofs of these poset coincidences. As a special case, we provide the first bijective proof of a 1983 theorem of R. Proctor–that plane partitions of height $k$ in a rectangle are equinumerous with plane partitions of height $k$ in a trapezoid. (Received July 14, 2016)