Amanda Welch* (welchajl@vt.edu). Double Affine Bruhat Order. Preliminary report.

Given a finite Weyl group $W_{\text{fin}}$ with root system $\Phi_{\text{fin}}$, one can create the affine Weyl group $W_{\text{aff}}$ by taking the semidirect product of the translation group associated to $Q^\vee$, the coroot lattice for $\Phi_{\text{fin}}$, with $W_{\text{fin}}$. The double affine Weyl semigroup $W$ can be created by using a similar semidirect product where one replaces $W_{\text{fin}}$ with $W_{\text{aff}}$ and $Q^\vee$ with the Tits cone of $W_{\text{aff}}$. We classify cocovers and covers of a given element of $W$ with respect to the Bruhat order, specifically when $W$ is associated to a finite root system that is irreducible and simply laced. We show two approaches: one adapting the work of Lam and Shimozono, and its strengthening by Milićević, where cocovers are characterized in the affine case using the quantum Bruhat graph of $W_{\text{fin}}$, and another, which takes a more geometrical approach by using the length difference set defined by Muthiah and Orr. (Received September 21, 2018)