1176-14-216 **Rebecca Goldin*** (`rgoldin@gmu.edu`), **Leonardo Mihalcea** and **Rahul Singh**. *Positive structure constants in equivariant cohomology.*

The equivariant cohomology of G/B exhibits a notion of *positivity,* occurring when a geometrically motivated module basis of the cohomology (given by Schubert classes) has the property that the product of two basis elements, expanded again in the basis, has coefficients that are polynomials with nonnegative coefficients. These *structure constants* live in the T equivariant cohomology of a point, where T is a maximal torus of G. Motivated by this notion of positivity, we introduce several bases for the equivariant cohomology of the Peterson variety P, a subvariety of G/B that is stable under a circle action.

Our first result is that "Peterson Schubert calculus" exhibits positivity, a remarkable phenomenon reflecting properties of the affine paving of Peterson varieties. Each basis satisfies a notion of duality with a set of smaller Peterson varieties, under a pairing between cohomology and homology. We share some combinatorial results on these coefficients, as well as open questions about when the whole machinery can be generalized from Peterson varieties to regular nilpotent Hessenberg varieties. (Received January 23, 2022)