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David A. Vogan* (dav@math.mit.edu). *Kazhdan-Lusztig polynomials for disconnected groups*. Preliminary report.

Suppose G is a complex connected reductive algebraic group with Cartan and Borel subgroups $H \subset B$. Let δ be an automorphism of G of finite order preserving a pinning. Suppose θ is an involutive automorphism of G commuting with δ , with fixed point group K . Write \tilde{G} for the semidirect product of G with the (finite cyclic) group of automorphisms generated by δ , and \tilde{K} for the subgroup generated by K and δ .

Write X for the complete flag variety of G . The classical Kazhdan-Lusztig polynomials describe dimensions of stalks of K -equivariant perverse sheaves on X . We consider a generalization of Kazhdan-Lusztig polynomials that compute traces of δ on stalks \tilde{K} -equivariant sheaves on X . When K is replaced by B , these polynomials were introduced by Lusztig in 1983. His ideas apply to the present setting as well.

These polynomials (or rather their values at 1) play a role in the algorithm of Adams, van Leeuwen, Trapa, Yee, and the author for calculating signatures of invariant Hermitian forms, and so identifying unitary representations. (Received July 24, 2011)