

# Hessenberg varieties and the Shareshian-Wachs conjecture

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## Abstract

I will explain the Shareshian-Wachs conjecture relating the cohomology of certain varieties of flags called Hessenberg varieties to certain symmetric functions defined in terms of graphs. The conjecture was proved in two very different ways, first by Tim Chow and myself using a combination of geometric and combinatorial methods, and then, shortly afterwards, by Mathieu Guay-Paquet using a certain Hopf algebra which he invented. I will focus mostly on my joint work with Chow, but, if time permits, I will also say something about Guay-Paquet's very interesting methods.

**Keywords:** flag variety, cohomology, symmetric function, Hopf algebra.