Let $\mathcal{H}_q(d)$ be the Iwahori-Hecke algebra for the symmetric group, $\Sigma_d$, where $q$ is a primitive $l$th root of unity. In this talk I will show how to develop a theory of support varieties which detects natural homological properties such as the complexity of modules. The theory the authors develop has a canonical description in an affine space where computations are tractable. The ideas involve the interplay with the computation of the cohomology ring due to Benson, Erdmann and Mikaelian, the theory of vertices due to Dipper and Du, and branching results for cohomology by Hemmer and Nakano.

Calculations of support varieties and vertices are presented for permutation, Young and classes of Specht modules. Furthermore, a discussion of how the authors’ results can be extended to other Hecke algebras for other classical groups is presented at the end of the talk. (Received January 26, 2019)