

Computational commutative algebra and geometric representation theory (currently the talk topic is tentative)

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Many interesting bases that arise in geometric representation theory are given by fundamental classes of singular varieties. Computing these bases can sometimes be reduced to a problem of commutative algebra. I will discuss some examples of this with an emphasis on the theory of Joseph polynomials, which correspond to the natural bases in Springer theory. I will discuss some code that implements this and some similar examples. One primary bottleneck is that information is passed back and forth between Sage and Macaulay2. I am eager to hear suggestions for improvement.