A Gysin formula for Hall-Littlewood polynomials

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Schubert calculus on Grassmannians is governed by Schur S-functions, the one on Lagrangian Grassmannians by Schur Q-functions. There were several attempts to give a unifying approach to both situations. We propose to use Hall-Littlewood symmetric polynomials (invented by Ph. Hall in the 1950s in his study of the combinatorial lattice structure of finite abelian p-groups). With the projection in a Grassmann bundle, there is associated its Gysin map, induced by pushing forward cycles (topologists call it "integration along fibers"). We state and prove a Gysin formula for HL-polynomials in these bundles. We discuss its two specializations, giving better insights to previously known formulas.