THE UNIVERSAL GYSIN FORMULAS FOR THE UNIVERSAL HALL-LITTLEWOOD FUNCTIONS

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Abstract. For certain kinds of maps (e.g., smooth maps between compact, oriented manifolds), the *Gysin maps* (or *push-forwards*) can be defined in the ordinary cohomology theory (or Chow theory). In particular, the Gysin maps for various flag bundles play an important role in algebraic geometry. In the context of Schubert calculus, there are many *Gysin formulas* for Schur S- and P-functions (Damon, Fulton-Pragacz, Harris-Tu, Pragacz, Sugawara). Recently Pragacz generalized these formulas to the *Hall-Littlewood functions* which interpolate Schur S- and P-functions. Our main goal is to generalize the above formulas in ordinary cohomology to the complex cobordism theory, which is *universal* among complex-oriented generalized cohomology theories. More precisely, we introduce the *universal* analogues of the Schur S-, P-, Q-, and Hall-Littlewood functions, and give analogous Gysin formulas for these functions in the complex cobordism theory. In order to establish these results, we use a topological approach which was developed by Bressler-Evens. As an application of our *universal* Gysin formulas, we give the Thom-Porteous formula, Chern's formula, and Darondeau-Pragacz formula in the complex cobordism theory. This is joint work with H. Naruse.

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