

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, or projections of fiber bundles), the *Gysin maps* (sometimes called *push-forwards*, *Umkehr maps*, *integration over the fiber* etc.) can be defined in ordinary cohomology. In *Schubert calculus*, there are many formulas for Gysin maps for Grassmann and flag bundles which relate *Schubert classes* with *Schur S - and P -functions* (Damon, Fulton, Harris-Tu, Pragacz). Recently Pragacz generalized the above formulas to the *Hall-Littlewood functions* which interpolate Schur S -functions 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* analogue of the Hall-Littlewood functions, which we call the *universal Hall-Littlewood functions*, and give analogous Gysin formulas in complex cobordism theory. This is joint work with H. Naruse.