Hunton, J. R.; Schuster, B.
Subalgebras of group cohomology defined by infinite loop spaces. (English)

The authors generalize the definition of the Chern subring of $H^\text{even}(G; \mathbb{Z})$ for a group $G$, generated by the Chern classes of all irreducible representations of $G$, in the following way:

Let $\{Y_i\}$ be a family of spaces and $\mathcal{F}$ a set of maps $f : X \to Y_i$. Let $R$ be a ring and define $Ch_{\mathcal{F}}(X; R)$ to be the subring of $H^*(X; R)$ generated by all elements $f^*(y)$, $y \in H^*(Y_i; R)$ homogeneous, $f \in \mathcal{F}$.

The paper is devoted to many applications of this construction like $Ch_E(X; R)$, where $E$ is an $\Omega$-spectrum and $\mathcal{F}$ are all mappings $f : X \to E_n$, specifically the Brown-Peterson spectrum $BP$ or the spectrum $MU$.

There are many inclusions and identities of these algebras by varying the spectrum $E$, which are much too complicated to be described here.

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MSC:
55P42 Stable homotopy theory, spectra
20J06 Cohomology of groups

Keywords:
group cohomology; chromatic filtrations; infinite loop spaces; generalised group characters; Chern classes

Full Text: DOI