

Invariant complex and hypercomplex structures on homogeneous spaces

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Abstract. The classical work of Borel and Hirzebruch [1] enables complete description of invariant almost complex and invariant complex structures on compact homogeneous spaces in terms of Lie groups root theory. The theory of invariant hypercomplex structures is developed in the seminal paper of Joyce, [3]. Relying on this, we give an overview of some of our results [2], [5] on existence and classification of such structures on some generalized symmetric spaces in connection with the corresponding Chern, Pontrjagin and cobordism characteristic classes and the corresponding characteristic numbers. We start by recalling some basic properties of the Chern numbers of a general hypercomplex vector bundle on a smooth manifold based on a geometric approach [4].

Keywords: homogeneous spaces; invariant complex structures; characteristic classes;.

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