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James A. Francese* (francese@chapman.edu). *Cohomology of Bicomplex-type Structures on Manifolds*. Preliminary report.

Complexification as an operation on real analytic manifolds leads to classical results allowing one to phrase this operation as a faithful functor into a category of Stein spaces, a collective finding of Bruhat-Whitney, Morrey, and Grauert. However, they are constructively known only up to homotopy. From a moduli space perspective, this is clear, since homotopy classes of non-degenerate 2-forms classify complex structures on manifolds. The situation is completely different for manifolds which are already complex, or carry other G-structure. In such cases the complexified G-structure is automatically equivalent to compatible foliations which provide a canonical model for the resulting manifold. Our focus is on almost bicomplex structures on real manifolds where we establish torsion conditions for the existence of special Hodge structures on de Rham cohomology. (Received August 28, 2018)