

MOD 2 COHOMOLOGY RINGS OF MODULI STACKS OF REAL VECTOR BUNDLES

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The rational cohomology ring of the moduli stack of holomorphic vector bundles of fixed rank and degree over a compact Riemann surface was studied by Atiyah and Bott using tools of differential geometry and algebraic topology: they found generators of that ring and computed its Poincaré series. In joint work with Chiu-Chu Melissa Liu, we study in a similar way the mod 2 cohomology ring of the moduli stack of Real vector bundles of fixed topological type over a compact Riemann surface with Real structure. The goal of the talk is to explain the principle of the computation, emphasizing the analogies and differences between the Real and complex cases, and discuss applications of the method. In particular, we provide explicit generators of mod 2 cohomology rings of moduli stacks of vector bundles over a real algebraic curve.