



HOLOMORPHIC YANG-MILLS FIELDS ON *B*-BRANES

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Considering *B*-branes over a complex manifold *X* as objects of the bounded derived category of coherent sheaves over *X*, we define holomorphic gauge fields on *B*-branes and introduce the Yang-Mills functional for these fields. These definitions extend well-known concepts in the context of vector bundles to the setting of *B*-branes.

For a given *B*-brane, we show that its Atiyah class is the obstruction to the existence of gauge fields. When *X* is the variety of complete flags in a three-dimensional complex vector space, we prove that any *B*-brane over *X* admits at most one holomorphic gauge field.

Furthermore, we establish that the set of Yang-Mills fields on a given *B*-brane, if nonempty, is in bijective correspondence with the points of an algebraic set defined by *m* complex polynomials of degree less than four in *m* indeterminates, where *m* is the dimension of the space of morphisms from the brane to its tensor product with the sheaf of holomorphic one-forms.

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