

# Higher Chern Correspondence

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## Abstract:

2-principal bundles are higher differential geometric objects analogous to classical principal bundles in which the structure group is replaced by a certain stacky generalization of a group. In this talk we initiate the study of 2-principal bundles in the holomorphic category with a simple model based on gerbes that avoids dealing with the language of stacks. We introduce a notion of connection on these objects and of compatibility with a given holomorphic structure, obtaining as our main result a Chern correspondence in this setting. Generalizing previous work by Y. Sheng, X. Xu, and C. Zhu and using a reduction procedure, we associate a Courant algebroid to each 2-principal bundle and by this procedure we recover the Chern correspondence for holomorphic string algebroids that was developed in recent work of M García Fernández, R. Rubio and C. Tipler. As an application, we can reformulate the Hull-Strominger system as a system of equations for either connections on a String-principal bundle or holomorphic structures on its complexification.