

Mathematics Colloquium

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Homotopy Algebra of
Open-Closed String
Field Theory

In work with Hiroshige Kajiura (math. /04), we define a strong homotopy algebra inspired by Zwiebach's classical open-closed string field theory and examine its homotopy algebraic structures, that is, algebraic structures that satisfy classical relations only up to homotopy but the homotopies in turn satisfy relations up to higher homotopies. Classical closed string field theory has an L_∞ -structure and classical open string field theory has an A_∞ -structure. As described by Zwiebach and others, closed string field theory is related to the conformal plane \mathbf{C} with punctures and open string field theory is related to the upper half plane H with punctures at the boundary. The algebraic structure of classical open-closed string field theory is similarly related to the upper half plane H with punctures both in the bulk and on the boundary. Our corresponding structure includes a strong homotopy algebra version of H . Cartan's concept of a Lie algebra acting on an associative algebra by derivations.

Wednesday, March 9

4:00 pm

204 Smith Hall