

## Abstract

Given a D-brane background in string theory (or equivalently boundary conditions in a two dimensional conformal field theory), classical solutions of open string field theory equations of motion are conjectured to describe new D-brane backgrounds (boundary conditions). In this thesis we study these solutions in the bosonic open string field theory using the level truncation approach, which is a numerical approach where the string field is truncated to a finite number of degrees of freedom.

We start with a review of the theoretical background and numerical methods which are needed in the level truncation approach and then we discuss solutions in several different backgrounds. First we discuss universal solutions, which do not depend on the open string background, then we analyze solutions of the free boson theory compactified on a circle or on a torus, then marginal solutions in three different approaches and finally solutions in theories which include the A-series of Virasoro minimal models. In addition to known D-branes, we find so-called exotic solutions which potentially describe yet unknown boundary states.