

DEPARTMENTS OF MATHEMATICS AND PHYSICS
UNIVERSITY OF UTAH

STRING GEOMETRY SEMINAR

Some mathematical aspects of D-branes

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In this talk we shall outline some recent work concerning boundary states and open string spectra in the B model topological field theory. General off-shell boundary states in the B model are believed to correspond to objects in the derived category of coherent sheaves, and open string modes are believed to correspond to RHom 's. In this talk we shall describe how this dictionary can be checked in detail for on-shell states, and some of the many physical effects that conspire to give the stated results. Computing massless spectra in closed strings is easy, but we shall see that in open strings the story is much more interesting: nontrivial boundary conditions in open strings have the effect of physically realizing spectral sequences in BRST cohomology, and multiple anomalies in the open string B model work together to make the spectrum match Ext 's. The end-result is that an extremely complicated physical computation can be translated into a comparatively easy mathematical computation, giving us powerful tools for physical computations. Time permitting, we will also describe how the same methods can be used to extend the known dictionary between on-shell boundary states and coherent sheaves.

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3:00 PM — LCB 323