

Stanford Department of Mathematics Colloquium

Fukaya categories and bordered Heegaard-Floer homology

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Abstract

An important feature of many invariants in low-dimensional topology is their functoriality with respect to decompositions of manifolds into smaller pieces. In the case of Heegaard-Floer homology (one of the most powerful 3-manifold invariants available), such a property was recently established by Robert Lipshitz, Peter Ozsvath and Dylan Thurston, whose "bordered Heegaard-Floer homology" associates to a 3-manifold with boundary F a pair of modules over a certain algebra $A(F)$.

After briefly reviewing the construction of bordered Heegaard-Floer homology, we will attempt to re-interpret it in terms of the symplectic topology of symmetric products. More specifically, we will explain how to understand the algebra $A(F)$ associated to a surface F in terms of a (relative) Fukaya category of the symmetric product of F ; if time permits we will outline the corresponding description of the module $CF A(Y)$ associated to a bordered 3-manifold.

Thursday, November 12
4:15 p.m.
Bldg. 380, Room 380-W.

<http://math.stanford.edu/coll/0910/>