Mathematics and CS Seminar

Cobordism maps in knot Floer homology

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An n-manifold is a topological space that locally looks like n-dimensional coordinate space. Surprisingly, the most difficult dimensions to understand are 3 and 4. Low-dimensional topology is an important area of mathematics that studies manifolds in exactly these dimensions. Knots play a central role in low-dimensional topology as they can be used to construct all 3- and 4-manifolds, and they also appear in physics, biology, and chemistry. Knot Floer homology is a powerful, computable, and geometrically rich invariant of knots defined by Ozsvath-Szabo and Rasmussen in 2002. Some of its properties are best understood via sutured Floer homology, a generalization to 3-manifolds with boundary that I developed. It is a fundamental question of low-dimensional topology to understand the surfaces a knot can bound in the 4-ball. In this talk, I will explain how a knot cobordism (a surface in 4-space connecting two knots) induces a functorial map on knot Floer homology via sutured Floer homology, and discuss some properties and applications.

Tuesday, March 13, 2018 11:00am - 12:00pm

Big Seminar room Ground floor / Office Bldg West (I21.EG.101)

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