

Research Talk: Floer Theory and Exact Results for Non-perturbative Complex Chern-Simons Theory

jeudi 8 juin 2023 14:00 (1 heure)

Heegaard branes are particular holomorphic Lagrangians in moduli spaces of Higgs bundles. During the past 16 years they played a useful role in a variety of problems in pure mathematics, ranging from the geometric Langlands program to low-dimensional topology. In particular, they played an important role in non-perturbative formulation of complex Chern-Simons theory via quantum groups at generic q and in formulating invariants of 4-manifolds via trisections. Their Floer theory, on the one hand, is related to monodromies (Stokes coefficients) in complex Chern-Simons theory on 3-manifolds and, on the other hand, to the curve count in Calabi-Yau 3-folds. Making these relations explicit and mathematically precise involves a number of interesting details: precise definitions of the moduli spaces (and their compactification) in gauge theory and in curve counting, a similar choice of the mathematical definition for Hom's in the corresponding Fukaya-Seidel category, and the role of Spin-C structures for quantum group invariants at generic q .

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