## Interactions of Low-dimensional Topology and Quantum Field Theory



Contribution ID: 16 Type: not specified

## Chern-Simons invariants, concordance, and homology cobordism

Tuesday 23 May 2023 21:00 (45 minutes)

Chern-Simons invariants of homology spheres, analyzed in conjunction with moduli spaces of solutions to the ASD Yang-Mills equations on 4-manifolds, provide a powerful tool for studying the homology cobordism groups of 3-manifolds and the closely related smooth concordance group of knots. I'll give an overview of this technique and discuss some of its applications.

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