

**Stony Brook University
The Graduate School**

Doctoral Defense Announcement

Abstract

Loop spaces, cyclic homology, and the A-infinity algebra of a Lagrangian submanifold

By

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We construct a new chain model of the (based and free) loop space of a path-connected topological space X , defined using the fundamental groupoid of X . This is a generalization of a classical theorem of Adams to non-simply connected spaces. Then we prove a variant of Jones' theorem on cyclic homology and S^1 -equivariant homology, and describe a chain level refinement of the string topology gravity algebra discovered by Chas-Sullivan. Finally we lift the Fukaya A-infinity algebra of a Lagrangian submanifold L to the dg Lie algebra of cyclic invariant chains on the free loop space of L , and discuss applications to the displaceability of L when L is negatively-curved and even-dimensional.

Date: May 10, 2023

Time: 2:00 pm - 3:00 pm

Place: Math Tower P-131

Program: Mathematics

Dissertation Advisor: Kenji Fukaya