

FLOWS, FOLIATIONS, ORDERS AND THE L-SPACE

CONJECTURE

Mini-Course Lecturer: Ying Hu
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Time: Wed., July 17th, 16:00-18:00; Fri., July 19th, 16:00-18:00

Venue: Room 102, SCMS

Abstract:

We say a group has a left-invariant linear (respectively, circular) order if one can linearly (respectively, circularly) order the elements of the group such that the relative "size" of the group elements remains unchanged under left-multiplication. When the group is the fundamental group of a 3 -manifold, the orderability of the group is naturally related to flows and foliations/laminations on the manifolds. The L-space conjecture sharpens and expands this nature connection, asserting the equivalence among the existence of invariant linear orders on the 3 -manifold group, the existence of taut foliations on 3 -manifolds, and the existence of a non-trivial summand of Heegaard Floer homology of 3 -manifolds.

In this series of lectures, we will begin with an overview of the conjecture, including its historical background, known results, and open questions. Afterwards, we will delve deeper in two specific topics: the applications of flows and foliations to study orders, and a relative version of the conjecture for manifolds with toral boundaries and its connection to the L-space conjecture.