ALPEN-ADRIA UNIVERSITÄT KLAGENFURT

Invitation to the Doctoral Seminar

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"Reconstruction Problems for Trees under Switching"

Z.1.08 | Wednesday, 1 July 2026 | 10:00 a.m.

Abstract

The classical reconstruction problem asks when a graph G can be reconstructed from its deck, where the deck consists of cards showing each of the vertex-deleted subgraphs of G. A number of infinite classes of graphs are known to be reconstructible in the classical problem. These include trees, for which Kelly proved reconstructibility in 1957. There are variants of this problem where the cards instead show the equivalence classes of graphs obtained by switching G. We study the problem of reconstructing trees for different types of switchings. First, we consider directed trees with a switching that reverses the directions at one vertex, and with the equivalence classes being the isomorphism classes. We show that for this problem, there is a small finite number of nonreconstructible trees. Next, we consider a variation of this problem, where the equivalence class of G is the union of the isomorphism classes of G and its converse graph. We conjecture that the number of nonreconstructible trees is finite in this setting as well. We conclude by presenting similar results for some other switching models, including switchings on two-edge-coloured trees.

Angelika Wiegele and the Department of Mathematics look forward to seeing you at the talk!