RACHEL HARDEMAN, University of Calgary

An Introduction to A-Homotopy Theory: A Discrete Homotopy Theory for Graphs

A-homotopy theory was invented by R. Aktin in the 1970s and further developed by H. Barcelo and others in the early 2000s as a combinatorial version of homotopy theory. This theory respects the structure of a graph, distinguishing between vertices and edges. While in classical homotopy theory all cycles are equivalent to the circle, in Ahomotopy theory the 3-cycle and 4-cycle are contractible and all larger cycles are equivalent to the circle.

In this talk, we will examine the fundamental group in A-homotopy from the perspective of covering spaces. We will also establish explicit lifting criteria and examine the role of the 3-cycles and 4-cycles in these criteria.