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Distinguishing Number of Countable Homogeneous Relational Structures

The distinguishing number of a graph G is the smallest positive integer r such that G has a labeling of its vertices with r labels for which there is no non-trivial automorphism of G preserving these labels.

M. Albertson and K. Collins computed the distinguishing number for various finite graphs, and W. Imrich, S. Klavzar and V. Trofimov computed the distinguishing number of some infinite graphs, showing in particular that the Random Graph has distinguishing number 2.

We compute the distinguishing number of various other finite and countable homogeneous structures, including undirected and directed graphs, and posets. We show that this number is in most cases two or infinite, and besides a few exceptions conjecture that this is so for all primitive homogeneous countable structures.

Joint work with L. Nguyen Van The and N. Sauer.