VCU Discrete Mathematics Seminar

Cup Stacking on Graphs

Paul Fay and Maya Tennant (VCU!)

Wednesday, Feb. 28 1:00-1:50 EST

In person! in 4145 Harris Hall, and Zoom @
https://vcu.zoom.us/j/92975799914
password=graphs2357



We will introduce a game on graphs called cup stacking (or lazy frog jumping). The most basic scenario begins with a single cup on each vertex of a graph. For a vertex with k cups on it we can move all its cups to a vertex at distance k from it, provided the second vertex already has at least one cup on it. The objective is to stack all cups onto some pre-described target vertex. We say that a graph is stackable if this can be accomplished for all possible target vertices.

We will explore cup stacking on many families of graphs, developing a characterization of stackability in graphs and using it to prove the stackability of complete graphs, paths, cycles, grids, the Petersen graph, many Kneser graphs, some trees, cubes of dimension up to 20, "somewhat balanced" complete t-partite graphs, and Hamiltonian diameter two graphs.

For the DM seminar schedule, see: https://go.vcu.edu/discrete