
ANDREI GAGARIN, Royal Holloway, University of London

The bondage number of graphs on topological surfaces and Teschner's conjecture

The bondage number of a graph is the smallest number of its edges whose removal results in a graph having a larger domination number. The decision problem for the bondage number is known to be NP-hard. We provide constant upper bounds for the bondage number with respect to embeddability of graphs on topological surfaces. We improve upper bounds for the bondage number in terms of the maximum vertex degree and the orientable and non-orientable genera of graphs. Also, we present stronger upper bounds for graphs with no triangles and graphs with the number of vertices larger than a certain threshold in terms of graph genera. This settles Teschner's Conjecture in the affirmative for almost all graphs. As an auxiliary result, we show tight lower bounds for the number of vertices of graphs 2-cell embeddable on topological surfaces of a given genus.

Joint work with Vadim Zverovich, University of the West of England