

Covers Have Structure

Henning Wunderlich

Ulm University

Faculty of Engineering and Computer Science,

Institute for Theoretical Computer Science

Oberer Eselsberg, D-89069 Ulm

`henning.wunderlich@uni-ulm.de`

We establish a new connection between the theory of Berge graphs (perfect graphs) and communication complexity. We discover a new class of squarefree Berge graphs, the class of *beautiful graphs*, and make progress towards their characterization: on the one hand, we give a complete list of forbidden induced subgraphs of order ≤ 7 , on the other hand, we show that every squarefree bipartite graph is beautiful, and, as the main result, we characterize the beautiful line graphs of squarefree bipartite graphs.