

Bled'11 - 7th Slovenian International Conference on Graph Theory

Contribution ID : 92



The Computational Complexity of Disconnected Cut and $2K_2$ -Partition

Content :

For a connected graph $G=(V,E)$, a subset U of V is called a disconnected cut if U disconnects the graph and the subgraph induced by U is disconnected as well. We show that the problem to test whether a graph has a disconnected cut is NP-complete. This problem is polynomially equivalent to the following problems: testing if a graph has a $2K_2$ -partition, testing if a graph allows a vertex-surjective homomorphism to the reflexive 4-cycle and testing if a graph has a spanning subgraph that consists of at most two bicliques. Hence, as an immediate consequence, these three decision problems are NP-complete as well. This settles an open problem frequently posed in each of the four settings.

Primary authors : Dr. MARTIN, Barnaby (Durham University)

Co-authors : Dr. PAULUSMA, Daniel (Durham University)

Presenter : Dr. MARTIN, Barnaby (Durham University)

Session classification : --not yet classified--

Track classification : Algorithmic Graph Theory

Type : Oral presentation