

SEMINARIUM MATEMATYKA DYSKRETNA

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EDGE RECONSTRUCTION OF CARTESIAN AND TWISTED CARTESIAN PRODUCT

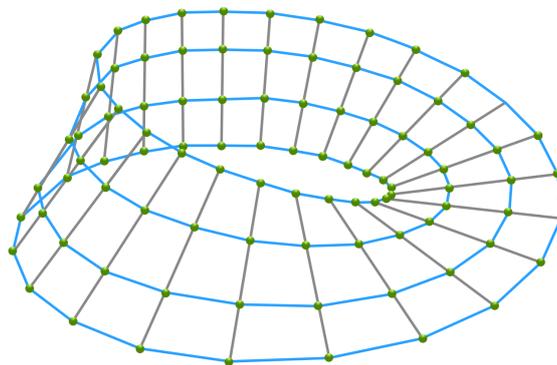
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In 1960 Ulam [2] asked whether a graph G is uniquely determined up to isomorphisms by its deck, that is, by the set of all graphs $G \setminus x$ obtained from G by deleting a vertex x and all edges incident to it. This led to the *Reconstruction Conjecture*, also known as *Ulam's Conjecture*, that any two graphs on at least three vertices with the same deck are isomorphic.

Shortly afterwards, in 1964 Harary [1] introduced the *Edge Reconstruction Conjecture*, that any two graphs with at least four edges that have the same deck of edge-deleted subgraphs are isomorphic.

For finite graphs both conjectures are still open. We will outline a proof for the *edge reconstructibility* of nontrivial Cartesian products, present reconstruction algorithms, and extend some of the results on Cartesian products to so-called *twisted Cartesian products*, an example of which is depicted below.



Literatura

- [1] F. Harary, On the reconstruction of a graph from a collection of subgraphs. In Theory of Graphs and its Applications (Proc. Sympos. Smolenice, 1963). Publ. House Czechoslovak Acad. Sci., Prague, 1964, pp. 47-52.
- [2] S. M. Ulam, A Collection of Mathematical Problems, Wiley, New York, 1960, p.29.