Dynamic visualizations for network flow optimizations problems with Mathematica

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Network flows as a problem domain is considered as a part of such mathematical disciplines as: graph theory, combinatorial optimization, mathematical programming or operation research. It is taught at universities in framework of different academic courses, for example: Graphs and networks, Optimization methods, Linear programming, Mathematical programming or Operation research. In the framework of network flows a number of optimizations problems are considered, such as: shortest path problem, maximum flow problem or minimum cost flow problem. Newer versions of Mathematica contain some functions dedicate to solve some network flows optimizations problems. In this talk, first we would like to present a few dynamic visualizations of network flows in pure, generalized and dynamic networks using Mathematica. Next, we will present visualizations for maximum flow problem and minimum cost flow problem

Keywords: network flows, network optimization, didactics of mathematics, mathematics education, CAS, Mathematica

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