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COMPUTER DESIGN OF STREAM NETWORKS OF P-th OPTIMALITY RANK

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A method for reducing the dimension of the synthesis problem of a stream network of the P-th rank of optimality is proposed. The method is based on the construction and use in the process of optimization of a chain of basic graphs (BG), on which a stream network of minimum cost is synthesized, having various degrees of vertices, so that synthesis of a network of rank R on a dense base graph (DBG) is replaced by the solution of the synthesis problem on a loose BG (LBG) with subsequent correction of the resulting network on the DBG. An extensive computational experiment was carried out, which showed the effectiveness of the proposed method - the value of the objective function (network cost) in the task of synthesizing a network of rank P according to the chain of basic graphs and directly on the DBG differ by only a fraction of a percent, and the time to solve the problem on the computer decreases about 5 times with the construction of a network of 4th rank.

Keywords: stream network, synthesis problem, economic parameters, network optimality rank, task dimensionality reduction, chain of basic graphs, computational experiment.

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