Heuristic Algorithms for Multi-Channel Convergecasting in Wireless Networks

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Keywords: wireless networks, energy efficiency, information desimination, multi-channel convergecasting

Minimization of the data aggregation time in the communication networks is one of the most important issues related to the prolonging the network lifetime. We consider a problem of construction a minimum length convergecasting schedule in multi-channel wireless networks in a case of unbounded number of channels. This problem may occur in the different wireless networks where the number of the frequencies is rather large, and therefore only the conflicts between the children of the same parent in the aggregation tree are taken into account.

This problem is equivalent to the well-known NP-hard telephone broadcasting problem, formulated in [1]. We propose new heuristic algorithms based on the tree generation techniques, developed for the approximate solution of Min-Power Symmetric Connectivity Problem [2, 3]. We have performed an extensive simulation, which demonstrated the advantage of our algorithms compared to the best of the previous approaches from [4, 5].

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