Scheduling in wireless OFDMA-TDMA networks using variable neighborhood search metaheuristic

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Résumé

In this talk, we present a hybrid resource allocation model for OFDMATDMA wireless networks and an algorithmic framework using a Variable Neighborhood Search metaheuristic approach for solving the problem. The model is aimed at maximizing the total bandwidth channel capacity of an uplink OFDMA-TDMA network subject to user power and subcarrier assignment constraints while simultaneously scheduling users in time. As such, the model is best suited for non-real time applications where subchannel multiuser diversity can be further exploited simultaneously in frequency and in time domains. The VNS approach is constructed upon a key aspect of the proposed model, namely its decomposition structure. Our numerical results show tight bounds for the proposed algorithm, e.g. less than 2% in most of the instances. Finally, the bounds are obtained at a very low computational cost.