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Transmission scheduling in wireless mesh networks

Abstract:

The main purpose of the presentation is to discuss an efficient approach to transmission scheduling in wireless mesh networks (WMN) based on an optimized system of compatible sets (CS).

A CS is set of radio links that can transmit simultaneously with an acceptable degree of interference. An optimized CS system maximizes a suitable traffic objective and specifies a sequence of CSs together with the proportion of time each of them should be used for. Then the optimized CS system defines a detailed transmission scheduling plan by assigning link transmissions to the consecutive time slots according to the optimized proportion of time during which the particular sets form the CS system should be used. It turns out that the difficulty of the CS optimization approach depends on the way the modulation and coding schemes can be used for link transmissions.

In any case, integer programming methods are necessary to obtain exact solutions. The presentation describes such methods, including heuristics.

Short Bio:



Michal Pióro is a professor and Head of the Computer Networks and Switching Division at the Institute of Telecommunications, Warsaw University of Technology, Poland. At the same time he is a professor at Lund University, Sweden. He received a Ph.D. degree in telecommunications in 1979, and a D.Sc. degree (habilitation) in 1990, both from the Warsaw University of Technology. In 2002 he received a Polish State Professorship. His research interests concentrate on modeling, optimization and performance evaluation of telecommunication networks and systems. He is an author of four books and more than 150 technical papers presented in the telecommunication journals and conference proceedings. He has led many research projects for telecom industry in the field of network modeling, design, and performance analysis. He is deeply involved in international research projects including the FP7, Celtic and COST projects.