

Two-Dimensional Packing Problems in Telecommunications

Speaker: Silvano Martello

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Abstract

The talk describes the development of a research, conducted within Nokia Siemens Networks, to solve the downlink sub-frame allocation problem in Mobile WiMAX (IEEE 802.16) technology in its full complexity, while simultaneously fulfilling real-life constraints on processing power and delay.

We review the main methodological steps that were followed in the development of the research:

- birth of the industrial problem;
- development of mathematical models (new two-dimensional packing problems);
- theoretical analysis of their computational complexity;
- evaluation of the technological constraints;
- choice and implementation of the solution approaches;
- experimental evaluation in realistic scenarios.

Biography

Silvano Martello is Professor of [Operations Research at the University of Bologna](#). He is author of the books *Knapsack Problems: Algorithms and Computer Implementations* (Wiley, 1990) and *Assignment Problems* (SIAM, 2009). He is Editor-in-Chief of [4OR: A Quarterly Journal of Operations Research](#), and serves as an Associate Editor for numerous international journals in operations research and discrete applied mathematics. He has published about 150 papers, and edited five books and fourteen special issues. His main research focus is combinatorial optimization, with special emphasis on packing, routing and scheduling problems. He is Coordinator of the [European Chapter in Combinatorial Optimization](#) and Senior Fellow of the Center for Management of Operations and Logistics of the University of Texas at Austin.