DEPARTMENT OF MATHEMATICS AND COMPUTER SCIENCE
ODENSE UNIVERSITY

COMPUTER SCIENCE COLLOQUIUM

Steiner Trees in the Plane: Algorithms and Applications

Martin Zachariasen
Department of Computer Science
University of Copenhagen

Tuesday, December 8, 1998, at 2:15 PM
The Seminar Room

Abstract: We consider the following fundamental network design problem, denoted the Steiner tree problem in the plane: Given a set of points (terminals) in the plane, construct a tree interconnecting all terminals such that the total length of all line segments is minimized. In the *Euclidean* Steiner tree problem, the length of a line segment is the usual Euclidean (or L_2) distance between the endpoints of the segment. Correspondingly, in the *rectilinear* Steiner tree problem distances are measured using the rectilinear (or L_1) distance metric. In this talk, we will describe recent exact and heuristic algorithms for these two problems. The new algorithms allow the exact solution of real-life instances with more than 2000 terminals. Applications of the rectilinear problem in VLSI design are given. Also, we give a short introduction to the important generalization in which a set of polygonal obstacles has to be avoided by the tree interconnecting the terminals.

Jørgen Bang-Jensen