

Seminar on Combinatorial Computing  
October 17, 2007, Wednesday, 6:30 p.m.  
Room 6417, Graduate Center  
365 Fifth Avenue, New York

## **Multidimensional visualization and its applications**

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### **Abstract**

The desire to understand the underlying geometry of multidimensional problems motivated several visualization methodologies to augment our limited 3-dimensional perception. After a short overview, Parallel Coordinates are rigorously developed obtaining a 1-1 mapping between subsets of Euclidean  $N$ -space and subsets of 2-space. It leads to representations of lines, flats, curves, intersections, hypersurfaces, proximities and geometrical construction algorithms. Convexity can be visualized in ANY dimension as well as non-orientability (Moebius strip) and other properties of hypersurfaces. This is a VISUAL Multidimensional Coordinate System with applications to Air Traffic Control, Visual and Automatic Data Mining, Interactive Models of Complex Systems.

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[http://www.math.nyu.edu/~pach/public\\_html/combinatorics\\_seminar.html](http://www.math.nyu.edu/~pach/public_html/combinatorics_seminar.html)