ÇANKAYA UNIVERSITY
FACULTY OF ARTS AND SCIENCES
DEPARTMENT OF MATHEMATICS

SEMINAR

Some computational methods of information analysis, and power law characterization

SPEAKER : **Prof. J. A. Tenreiro Machado (ISEP, Porto, Portugal)**

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PLACE : **Çankaya University (Central Campus), R-213**

Abstract

The talk addresses several natural and man-made complex phenomena. Many phenomena are often characterized by the absence of a characteristic length-scale, long range correlations and persistent memory. In this line of thought, two perspectives are discussed, namely algorithmic and statistical approaches. Multidimensional scaling (MDS) and Hierarchical clustering (HC), for the first, and Power law (PL), for the second, are presented.

MDS is a technique used for visualization information in the perspective of exploring similarities in data. MDS assigns a point to each item in a multi-dimensional space and arranges them in order to reproduce the observed. The MDS interpretation is based on the emerging clusters and relative distances, rather than on the absolute coordinates, or shapes. The main objective of HC is to group together objects that are 'close' to one another. Visualization by some kind of 'trees' leads to interpretation similar to those with MDS.

PL distributions, also known as heavy tail distributions, Pareto-like laws, or Zipf-like laws, have been largely reported in the modeling of distinct real phenomena. Nevertheless, this is still a controversial issue since there are authors that state that PLs are simply statistical phenomena, that is, spurious facts. The talk summarizes results found in the literature and presents some interesting issues

All interested are cordially invited.

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