CHEP 06

Contribution ID : 354

Application of data visualisation techniques in particle physics

Thursday 16 Feb 2006 at 14:54 (00h18')

Content :

Visualisation of data in particle physics currently involves event displays, histograms and scatterplots. Since 1975 there has been an explosion of techniques for data visualisation driven by highly interactive computer systems and ideas from statistical graphics. This field has been driven by demands for data mining of large databases and genomics. Two key areas are direct manipulation of visual data, and new methods for visualising high-dimensional data. The first area has seen the use of linked views, brushing and pruning. The second area has seen the introduction of methods such as parallel coordinates and the grand tour.

In this paper, these ideas are applied to particle physics data to evaluate their ability to reduce data analysis time and improve pattern recognition. In particular, parallel coordinates will be used to analyse a sample of K-short Monte Carlo events. It will be shown that this graphical technique significantly reduces the time taken to determine the key variables for event selection.

This paper will also evaluate various publicly available software tools that include many of the new statistical graphics techniques. The paper will conclude that no single tool includes all the most powerful new techniques and argue that urgent work is required to integrate these ideas into data analysis tools for particle physics.

Primary authors : Prof. WATTS, Stephen (Brunel University)

Co-authors :

Presenter : Prof. WATTS, Stephen (Brunel University)

Session classification : Event Processing Applications

Track classification : Event processing applications

Type : oral presentation