

## Visual analysis of dynamic processes



Contribution ID: 22

Type: **not specified**

# Interactive Visual Analysis in the Material and Computational Sciences

*Tuesday, January 10, 2017 9:00 AM (1 hour)*

Visualization and visual computing use computer-supported, interactive, visual representations of (abstract) data to amplify cognition. In recent years data complexity concerning volume, veracity, velocity, and variety has increased considerably. This is due to new data sources as well as the availability of uncertainty, error and tolerance information. Instead of individual objects entire sets, collections, and ensembles are visually investigated. There is a need for visual analyses, comparative visualization, quantitative visualizations, and scalable visualizations. The simultaneous exploration and visualization of spatial and abstract information is an important case in point. Several examples from the material and computational sciences will be discussed in detail. Given the amplified data variability, interactive visual data analyses are likely to gain in importance in the future. Research challenges and directions are sketched at the end of the talk.

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**Track Classification:** Lectures