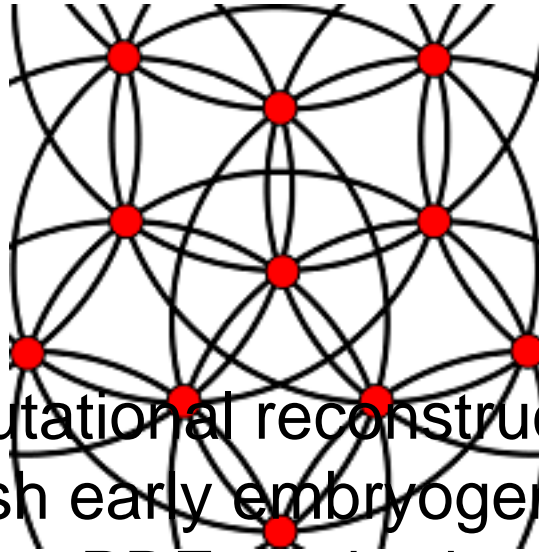


# CSASC 2013



Contribution ID : 88

## Computational reconstruction of zebrafish early embryogenesis by nonlinear PDE methods of image processing

### **Content :**

In the talk we present mathematical models and numerical methods which lead to early embryogenesis reconstruction and extraction of the cell lineage tree from the large-scale 4D image sequences. Robust and efficient finite volume schemes for solving nonlinear PDEs related to filtering, object detection and segmentation of 3D images were designed to that goal and studied mathematically. They were parallelized for massively parallel computer clusters and applied to the mentioned problems in developmental biology. The presented results were obtained in cooperation of groups at Slovak University of Technology, Bratislava, CNRS, Paris and University of Bologna.

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