KEYNOTE TALK
Tuesday, December 13, 2016
8:30 AM – 9:30 AM / (Ballrooms 313 & 316)

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Optimal Streamlines and Streamsurfaces for 3D Flow Visualization

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Abstract

Flow Visualization is one of the core topics in Scientific Visualization. Flow data belongs to the largest and most complex data to be analyzed in Visualization. Streamlines and Streamsurfaces are standard tools for the visual analysis of flow data. Nevertheless, their applications still poses challenges concerning their extraction, integration, and visualization. In the talk, we tackle three problems: (i) the selection of suitable stream lines, (ii) a stable integration of stream surfaces, (iii) the selection of suitable stream surfaces. We show that these problems can and should be formulated as global optimization problems. We present the respective error functionals to be minimized and show solutions for several test cases.

Speaker Bio-Sketch: Holger Theisel is a full professor for Visual Computing at the University of Magdeburg (Germany). He received his M.S. (1994), Ph.D. (1996) and habilitation (2001) degrees from the University of Rostock (Germany) where he studied Computer Science (1989 - 1994) and worked as a research and teaching assistant (1995 - 2001). He spent 12 months (1994 - 1995) as a visiting scholar at Arizona State University (USA), and 6 months as a guest lecturer at ICIMAF Havana (Cuba). 2002 - 2006 he was a member of the Computer Graphics group at MPI Informatik Saarbrücken (Germany). 2006-2007 he was a professor for Computer Graphics at Bielefeld University (Germany). Since October 2007 he is at the University of Magdeburg. His research interests focus on scientific visualization as well as on geometric modelling, geometry processing, information visualization and Visual Analytics. He was paper co-chair of EuroVis 2013 and is Associate Editor of IEEE Transactions on Visualization and Computer Graphics.