




## TRAINING DAY (MAY 26)

### • Course on SPH theory and application

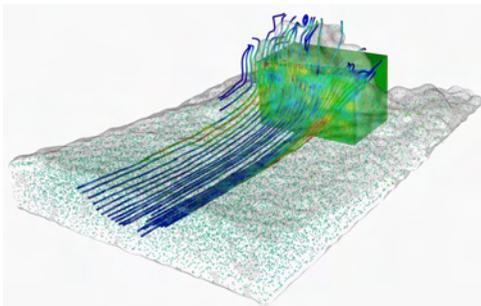
The first part of the training day will consist of an introduction to SPH with a special emphasis on interpolation and gradient operations, with practical examples in the open-source SPH solver SPHysics. The training is most suitable for researchers who are familiar with the principles of SPH but are beginning their work in the field. More experienced SPH developers and users may find that the training day is a useful opportunity for sharing insights and ideas.

The course will supplement the standard literature with an up-to-date overview, practical advice, and a detailed treatment on the three following topics:

- Introduction: the place of SPH in numerical modeling
- Thematic course/theory: SPH interpolation and gradient approximations; Effect of kernel shape; Error and convergence; RKPM and "corrected" SPH; Second derivatives
- Thematic course/practise: examples in SPHysics



*Courtesy of  
EDF &  
CSCS*



### • SPH simulation post-processing

This half-day tutorial will be devoted to visualization and analysis of SPH data using the ParaView and pv-meshless packages. The tutorial will be a 'hands on event' with all participants requiring a laptop, or a partner with a laptop. Prior to the tutorial, test datasets and binary downloads will be made available for users to install on their laptops. Platforms supported will be Windows XP, Suse Linux, Redhat Linux and Mac OS X. All downloads will be linked from the workshop web site.

The course will cover:

- Data Import: Specific formats: H5Part, ASCII2H5Part converter
- Displaying Particles: The GPU Point-Sprite renderer, opacity, radius, colour
- Selection: selecting particles and displaying information/properties
- Generating plots of particle parameters over time
- Creating animations. How to setup animations and control them
- Quantitative analysis: SPH specific
  - Probe filters, point/line/plane/box
  - Integration of parameters
  - Free-surface extraction, contour generation
  - Water height for dam-break style test cases
  - Projection filters for advance geometry probing
- Boundary treatments
- Parallel rendering. Working with larger datasets.



CENTRALE NANTES



NANTES, FRANCE

2009, MAY (26) 27-29

### Key dates & infos

- > Abstract submission: 18/02/2009
- > Announcement of selected abstracts: 18/03/2009
- > Website: <http://www.ec-nantes.fr/4thSPHERIC>

- > Early registration: 01/04/2009
- > Proceeding papers submission: 24/04/2009
- > Contact at: [4thSPHERIC@ec-nantes.fr](mailto:4thSPHERIC@ec-nantes.fr)

S p o n s o r s



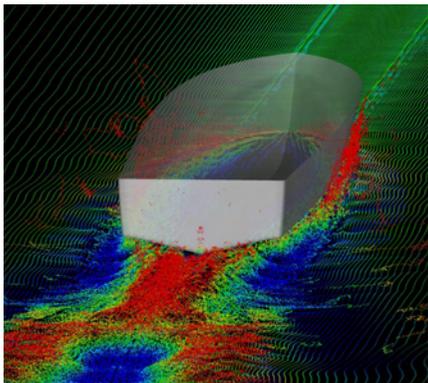


## OVERVIEW & OBJECTIVES

The fourth international workshop organized by the Smoothed Particle Hydrodynamics European Research Interest Community, SPHERIC, will be the major international event of 2009 in the SPH research field. It will be held at Centrale Nantes, in Nantes, France, from May 27<sup>th</sup> to May 29<sup>th</sup> 2009 with an additional training day on May 26<sup>th</sup>, 2009.

The purpose of this workshop is to :

- share Smoothed Particle Hydrodynamics experience and developments;
- create an open worldwide, and collaborative spirit between SPH researchers;
- encourage favorable exposure for Ph. D. students in the early stage of their career.



*Courtesy of École Centrale Nantes & HydrOcean*



## PROGRAM

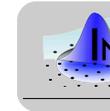
The topics of this workshop will cover a large range of areas of SPH including :

- Astrophysics,
- Solids, Plasticity and Fractures,
- Water Waves, Wave Loads, Numerical Wave Tanks,
- Fluid-Structure Interaction,
- Engineering applications,
- Mathematical and Fundamental Aspects,
- "Non-standard" Formulations,
- Multiphase SPH,
- Boundary conditions,
- Compressibility in fluids,
- Viscosity & turbulence,
- Hardware & High-Performance Computing,
- Visualization,...

The workshop aims to focus on new scientific developments and advanced applications of the SPH method. The number of presentations will be limited (see deadlines below). Abstracts and papers will be reviewed by the SPHERIC steering committee. Sessions will be structured according to submitted papers. A template will be provided on the website for paper submission.

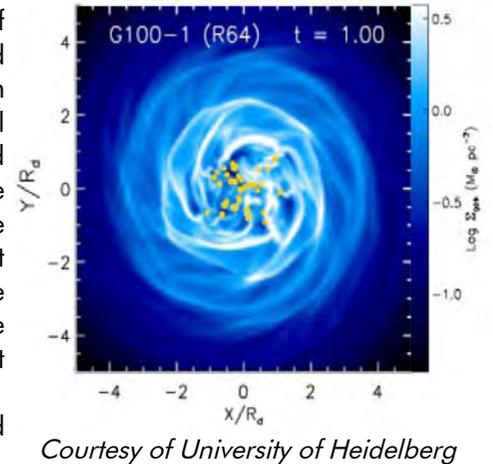
### Invited speakers:

- Prof. W. Benz, University of Bern, Switzerland
- Prof. R. Vignjevic, Cranfield University, U.K.
- Dr. P. Cleary, CSIRO, Australia



## INFORMATION

A book of proceedings and a Pdf version on a USB stick will be delivered during the workshop. The Libersky student prize will be awarded to the best student contribution (paper and presentation).



*Courtesy of University of Heidelberg*

Use of the SPHERIC benchmark test cases is encouraged, see:

[http://wiki.manchester.ac.uk/spheric/index.php/Validation\\_Tests](http://wiki.manchester.ac.uk/spheric/index.php/Validation_Tests)

Registration will be open from March 1<sup>st</sup> with a special reduced rate until April 1<sup>st</sup>. Registration for the special training courses will be closed on April 24<sup>th</sup>, as the number of participants is limited.

Additional information (abstract submission and templates, committees, important notices, program and registration) can be found on the website dedicated to the workshop :

<http://www.ec-nantes.fr/4thSPHERIC>

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Registration costs	General participant	Student
Before April 1 <sup>st</sup>	350 €	250 €
After April 1 <sup>st</sup>	450 €	320 €