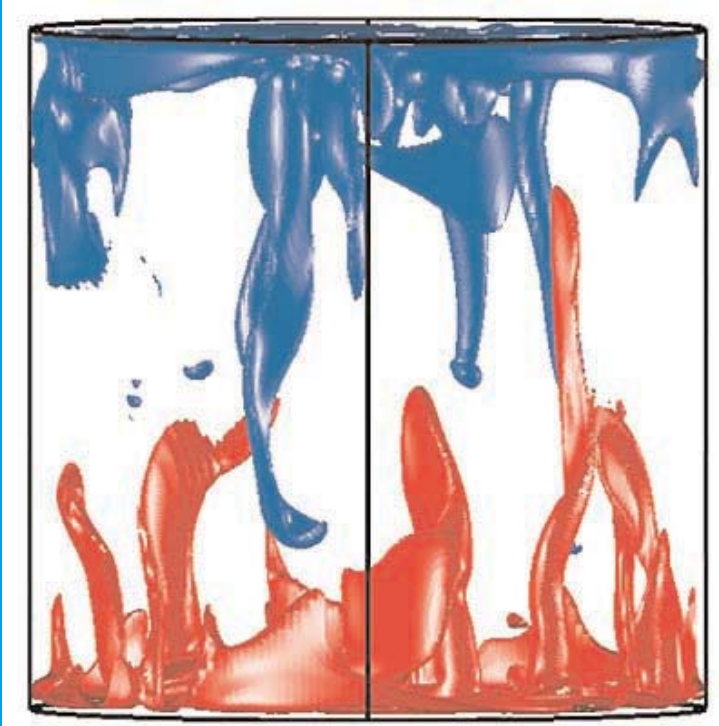
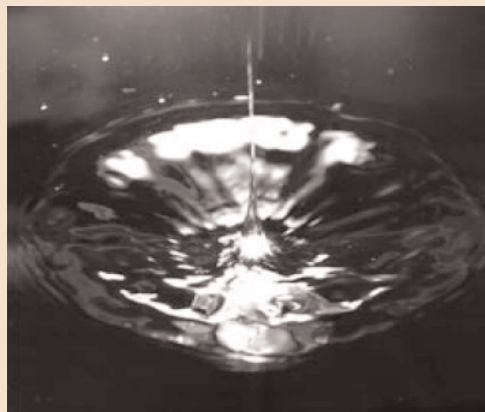


2009.1



Picture above : Three-dimensional temperature isosurfaces of a fluid in a rotating cylinder heated from below. (see article : Phys. Rev. Letter. 102, 044502 (2009) by Jin-Qiang Zhong, RJAM Stevens, HJH Clercx, R Verzicco, D Lohse, G Ahlers.
Picture below : A disk pulled rapidly into water generates a jet.
(for more info go to <http://focus.aps.org/story/v23/st3>)



JMBC Newsletter

J.M. Burgerscentrum



Research School for Fluid Mechanics
TUD, TUE, UT, RUG, RUN, UL, WUR, UU

CONTENTS

Newsflash

- 4 News from the JM Burgerscentrum
- 5 Going with the flow
- 6 Filtered two-fluid models for fluidized gas-particle suspensions
- 7 PCF & POF win prestigious Veeco's HarmoniX research grant
- 8 Why dropping a stone makes a jet
- 10 Van Saarloos visit the JMBC Maryland

Calendar

- 18 JMBC PhD courses
- 21 OSPT courses
 - ERCOFTAC meetings
 - Von Karman Institute courses

Vacancies

- 22 TUD
 - TUE
- 23 UT
 - Industries & Institutes

Announcements

- 12 New group : L Maas | UU
 - ERCOFTAC Da Vinci award
- 13 New professor : R Henkes | TUD/Shell
 - Meeting of contactgroup Multiphase Flow
- 14 New group : F van de Vosse | TUE
- 15 Granular and disordered media group | UL
- 16 Cum laude for H Bluemink UT
 - Cum laude for D Lentink WUR
 - New chairman for the PhD Contact group
- 17 Grants
 - R Heynes wins NVV Combustion award
 - Comb. graduate wins Dutch gas industry price

Who and where

- 24 Participating groups and projectleaders
- 27 JMBC Board of Directors
 - Management Team
 - Industrial Board
 - PhD students Representatives
- 28 PhD students Contact Group
 - JM Burgerscentrum The Netherlands
 - Burgers Program for Fluid Dynamics (USA)

Forms

- 29 Form for a new JMBC member
- 30 Form for JMBC PhD courses

NEWSFLASH

News from the JM Burgerscentrum

This year the annual day of our research school (Burgersdag) was held at Eindhoven University of Technology. There were more than two-hundred participants. There was an excellent Burgers Lecture by professor Sankaran Sundaresan of Princeton University. Thereafter three parallel sessions were held during which JMBC PhD-students presented their projects via twelve minutes presentations. Professors BendiksJan Boersma and Federico Toschi closed the day with interesting lectures. This Burgersdag was generally considered as a success. There are, of course, some points for improvement. Most participants missed, for instance, a common closure session at the end of the day, during which the winner of the best poster prize is announced. The next Burgersdag will be on 13 January 2010 at Twente University.

In the coming months again some interesting JMBC PhD courses will be given. There is a course on 'biological fluid mechanics' at the TUE (9-13 March), on 'turbulence' at the TUD (23-27 March) and on 'wetting and capillary-driven flows' at the UT (20-24 April). PhD-students and post-docs are strongly recommended to participate in these courses. Also (research) staff from industries, GTI's and TNO are welcome. The JMBC is grateful to the organizers of these important courses.

As you know, we have a good interaction with the Burgers Program at the University of Maryland in the USA. A Burgers Lecture is also held every year during the annual day of the Burgers Program (like the Burgers Lecture of the JMBC). Last year professor Wim van Saarloos of Leiden University was invited to come to the University of Maryland to give this distinguished lecture and to visit groups belonging to the Burgers Program. In this newsletter you will find a report about his visit.

Two new groups started their participation in our research school: professor Frans van de Vosse's group of Eindhoven University of Technology and professor Leo Maas' group of Utrecht University. A brief description of the research carried out in these groups can be found in this newsletter.

Mrs. Ilse Hoekstein is preparing the 2008 annual report. Each JMBC group is kindly asked to send their contribution to her in time. It is much recommended that every PhD student writes the report for his/her project. In this way the preparation takes little time of everybody. Moreover the PhD students like the idea to be responsible for the contribution of their own project.



G Ooms, Scientific director of the JMBC

Filtered two-fluid models for fluidized gas-particle suspensions

(Burgers Lecture 2009)

It is well known that gas-particle flows exhibit large fluctuations in velocities and local suspension density. In riser flows, these fluctuations are associated with the random motion of the individual particles and with the chaotic motion of particle clusters, which are repeatedly formed and broken apart. These clusters occur over a wide range of length scales and their dynamics span a broad range of time scales. This broad range of scales has made it difficult to construct efficient flow models required for practical analysis of flows in large fluidized beds and risers. In this presentation, I will discuss the results of our ongoing study aimed at the development of filtered hydrodynamic models for such systems. These filtered two-fluid models are conceptually analogous to the Large Eddy Simulation models for turbulent flows.

We have extracted filtered drag coefficient and particle phase stresses as functions of the local particle volume fraction and the size of the spatial averaging window (i.e. filter width). This was done through highly resolved simulations of fluidized suspensions in a periodic domain, followed by filtering of the results using different filter widths.

The filtered drag coefficient decreased systematically with increasing filter width, while the filtered particle-phase stresses increased with filter size. Both two- and three-dimensional simulations manifest nearly identical scaling.

We have also sought to validate the coarse-graining approach which uses the filtered drag coefficient and particle phase stresses by comparing the results obtained in test simulations using the coarse-grained equations with those obtained by highly resolved simulations of the kinetic theory model. As expected, the coarse-grained equations yielded coarser structures than those seen in the kinetic theory simulations, and they also led to a converged solution for a much lower grid resolution. The details of these results will be described in the presentation.



S Sundaresan | Princeton University USA | Chemical Engineering | sundar@princeton.edu

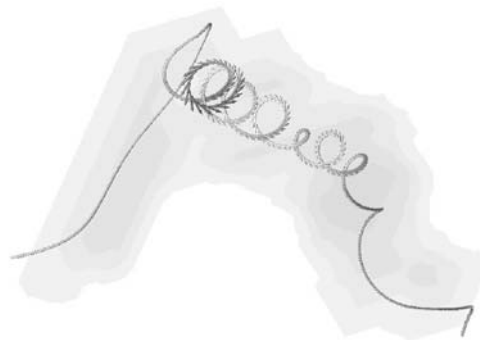
Going with the flow

Perhaps the most effective way to study the statistical properties of particles dispersion is to follow their evolution in time (i.e. to sit on a particle). The statistical properties of particles are more complicated than those of the Eulerian velocity field as their motion results from a combination of their own dynamics plus the one of the chaotic turbulent velocity field in which they evolve. It is then quite natural to expect that the understanding of the statistical properties of particle transport should pass through a good understanding of the statistical properties of the Eulerian flow first. Surprisingly this is not always the case and some type of particles can be used to study some of the most elusive properties of Eulerian turbulence: the dynamics of small scale vortex filaments.

Very light particles (e.g. air bubbles in water) with Stokes numbers in the order of unity have a strong tendency to enter inside small scale vortex filaments (this properties has also been used to visualize vortex filaments, Douady et al. 1991). By means of a numerical database it is possible to follow the dynamics of clouds of particles. The size of the cloud of particle can be quantified in terms of its moment of inertia. Abnormal drops in the value of the moment of inertia can be used as robust indicators of the presence of small-scale vortex filaments. By using this indicator it was possible, for the first time, to quantify the probability distribution function of lifetimes of vortex filaments. Douady et al. Direct observation of the intermittency of intense vorticity filaments in turbulence. *Phys. Rev. Lett.* (1991) vol. 67 (8) pp. 983-986 Toschi & Bodenschatz. Lagrangian properties of particles in Turbulence. *Ann. Rev. Fluid Mech.* (2009) vol. 41 pp. 375-404.



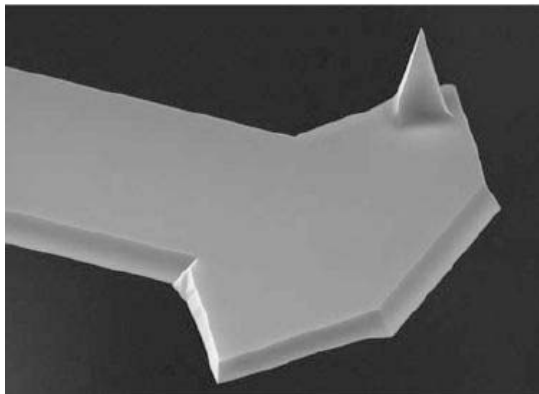
F Toschi | TUE



The evolution of a fluid tracers inside a small scale vortex filament.

PCF & POF win prestigious Veeco's HarmoniX research grant

In a worldwide competition, Veeco, the world's largest manufacturer of Atomic Force Microscopes selected nine research proposals of leading groups in scanning probe microscopy to explore the potential of the novel imaging mode "HarmoniX" introduced by the company last summer. The HarmoniX mode was developed to provide precise maps of surface properties (elasticity, adhesion, dissipation) in real-time. The proposal of Sissi de Beer (PCF), Dirk van den Ende (PCF), Frieder Mugele (PCF), Bram Borkent (PoF) and Detlef Lohse (PoF) was chosen as the best one. PCF and PoF will use the grant to research the two big topics of discussion in Nanofluidics: oscillatory tip-sample interaction forces owing to nanoscale confined fluids and the properties of surface nanobubbles typically covering hydrophobic surfaces immersed into water.



HarmoniX cantilever used to real-time quantitatively map elastic and dissipative forces during TappingModeTM imaging.



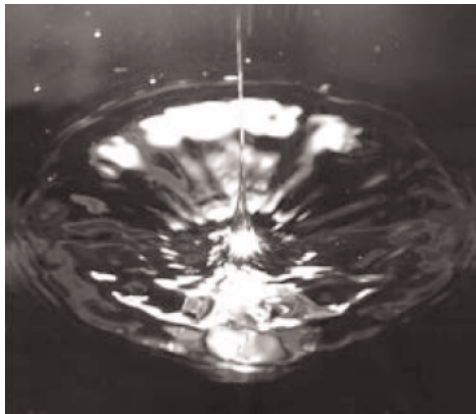
D Lohse | UT

Why dropping a stone makes a jet

The splash of a solid object into water--be it a coin or an Olympic high diver--is capped off by a thin jet of fluid shooting straight up from the surface. The detailed explanation of this seemingly simple event has proved elusive. Now researchers publishing in the 23 January Physical Review Letters think they have a more complete explanation than their predecessors. Using a combination of theory, simulation, and experiment, they studied the collapse of the air cavity trailing the submerged object, concluding that it ejects water like toothpaste squeezed rapidly from its tube.

A solid object plows a roughly symmetrical tube of air into a fluid. The sideways pressure exerted by the surrounding water quickly begins to collapse the cavity, first by pinching off the cylinder at its midpoint. Twin jets shoot straight up and down from the pinch-off point, called a pinch singularity. Researchers had assumed that the concentrated forces built up at the pinch point were sufficient to drive jet formation, says Stephan Gekle, a graduate student at the University of Twente in the Netherlands. In some models, the build-up comes from a mix of so-called inertial focusing--the concentration of energy as the cavity collapses--and surface tension violently drawing the cavity shut.

But nobody had proved that the jet was a direct outgrowth of the pinch alone, says Gekle. "You still have the wall of the cavity," he says. "You have to consider the entire cavity collapse." So Gekle, his graduate supervisor Detlef Lohse, and their colleagues--including a collaborator from the University of Seville in Spain--expanded the inertial focusing analysis to cover the whole cylinder, which closes from the pinch-off point as if zippers were being pulled up and down. Inertial focusing occurs because water accelerates as it rushes in to fill the cylindrical cavity. As the water begins to fill in, the circumference of the cylinder shrinks, but the total volume of water coming in per unit time remains constant. With less space to move through, the water must speed up. (This same principle explains why pinching a garden hose increases the stream's speed.) Finally, hemmed in all around, the water has nowhere to go but up or down.



D. A. van der Bos/Univ. of Twente
Plunk. A disk pulled rapidly into water generates a jet that is explained by a sort of toothpaste-squeezing scenario, according to researchers who used simulations and high-speed video cameras. For more information and videos go to <http://focus.aps.org/story/v23/st3>

NEWSFLASH continued

The team pulled a 4-centimeter-diameter circular disk down through a water surface at 1 meter per second and used high-speed imaging to track the base of the jet as it moved up from the pinch-off point. Then they simulated the jet base on a computer. The simulated and real motion agreed closely, although the simulated jet base ascended faster than the real one, a discrepancy Gekle blames on the slight asymmetry of the real thing. The formation of the jet was the same whether or not they included surface tension in the simulation, indicating that whatever role it may play prior to pinch-off, surface tension was not driving the jet by flinging water up like a trampoline tossing an acrobat, as some had speculated.

The simulation in turn agreed with a mathematical treatment, which together gave the team new insight into the jet-generation mechanism. "Our new mechanism says that the exact driving of the pinch-off . . . is not the most important factor in the game," Gekle says. Instead, the group found that as the jet base moves upward, the continued inertial focusing draws in more water and accelerates it upward, much like squeezing a toothpaste tube quickly from bottom to top. Gekle says a single push from the pinch-off point--like a single squeeze of the toothpaste tube--would not provide enough force to maintain the jet.

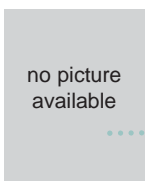
The study lends "very convincing" support to the inertial origin of jetting, says Sigurdur Thoroddsen of King Abdullah University of Science and Technology in Jeddah, Saudi Arabia, who has studied high-speed water jets experimentally. "The fact that it combines theory, experiments, and numerical simulation gives it extra reliability," he says. He adds that researchers will learn more when high-speed video cameras become powerful enough to resolve the instant when the momentum of the rushing water switches from inward to up and down. "I believe there are still some surprises awaiting in this jetting geometry."



S Gekle | UT



D van der Meer | UT



JM Gordillo | UT



D Lohse | UT

Van Saarloos visit the JMBC Maryland

As most of the readers of the newsletter know, the University of Maryland (UMD), located in College Park near Washington DC, also has a Burgers program. This program was stimulated a few years ago by the Burgers school in the Netherlands, in recognition of the fact that Burgers spent the second half of his successful scientific career at the UMD. Some of the main activities of this program, which involves researchers in fluid dynamics from all disciplines at UMD, is to organize a yearly Burgers symposium and to stimulate exchanges of (graduate) students between groups at UMD and those involved in the J. M. Burgers Centrum in the Netherlands. The interest in this exchange program is rapidly growing - this year Steven Slotterback from Losert's granular media group at UMD was the first graduate student to work in Martin van Hecke's group in Leiden for an extended period through this program, while two of Detlef Lohse's students, Joost Weijs and Tess Homan worked in Losert's group.

In November 2008, I spent two marvellous weeks at UMD myself through this program. I gave the Burgers lecture and two additional talks, and had many discussions with colleagues. Most of all I enjoyed the intense interactions with Wolfgang Losert's group on granular media and with John Weeks on the theory of ionic liquids, which both are leading to new collaborations. I will report here briefly on the collaboration on granular media.

One of the difficulties of granular media research is that it usually difficult to probe the flow inside a system. One of the recent advances of the granular media group at UMD is that they have been able to develop a way to visualize the flow three dimensionally, i.e., to follow the flow inside. In essence, the method, illustrated in Fig. 1, is to use index matched particles and fluid and to make the particles fluoresce. By illuminating the sample with a laser sheet (Fig. 1a) one can trace the particle positions in a layer (Fig. 1b) and by scanning the sheet across the sample, one can trace the positions in each layer (Fig. 1c). With suitable software, one can then reconstruct the positions of all particles in the sample three-dimensionally. This can even be done dynamically for quasistatic flows.

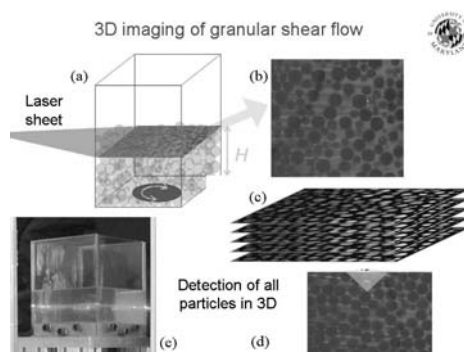


Illustration of the technique developed in the group of Losert at UMD to measure particle positions in a granular medium. Index matched particles are illuminated by a sheet of laser light (a); (b) because these particles fluoresce, the positions of the particles in the illuminated layer can be determined. From the positions in a number of layers (c), the full three-dimensional image is reconstructed as indicated in (d). The experimental setup is shown in (e).

NEWSFLASH continued

One of the interesting applications of such measurements concerns the relative particle displacements during quasistatic flows. It has recently become realized that there are some important differences between the response of a medium consisting of compressible particles and that of a system consisting of relatively hard, incompressible particles. The main idea is actually quite simple. As long as two particles do not touch, during flow, their relative motion is determined by the overall coarse grained flow profile. However, as soon as two relatively incompressible particles touch, their relative motion becomes of the "rolling" or "sliding" type. During this motion, their relative velocity is essentially perpendicular to the vector between their centers (see Fig. 2a). Simple ideas of this type have been proven quite relevant for understanding a variety of granular systems, including wet foams, as a function of the so-called jamming point, but so far the effect had not been measured explicitly in three-dimensional flows. As Fig. 2 illustrates, the measurements of particle position and displacement of Steven Slotterback are precise enough to show that indeed the probability distribution of the cosine of the displacement angles of particles that are nearby but not in contact (particles whose centers are further away than 1.04 diameter) is relatively flat, while those of particles which are in contact, is strongly peaked around $\alpha = \pi/2$ ($\cos(\alpha) \sim 0$).

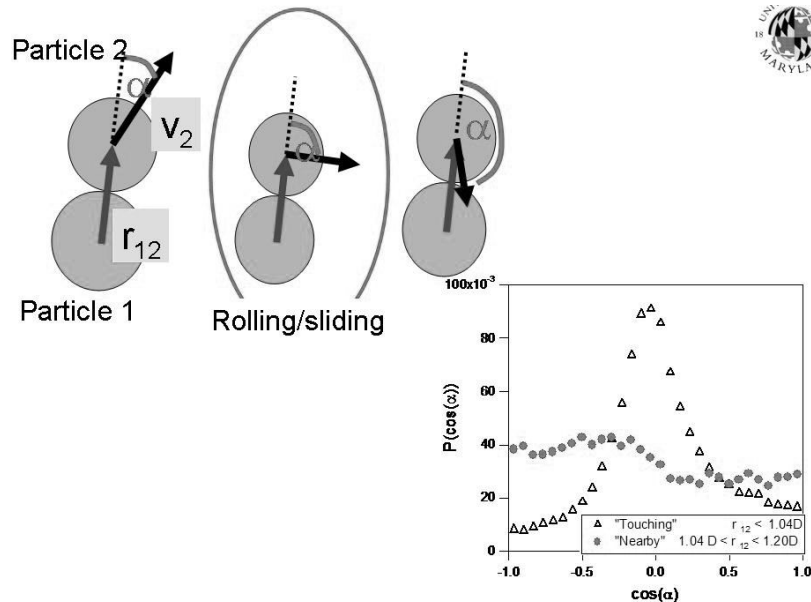


Illustration of the fact that when two hard particles touch, during flow, they start to roll over each other so that their relative displacement angle α becomes $\pi/2$. (b) Measured probability distribution function $P(\cos(\alpha))$ of nearby particles not in contact (red symbols) and particles in contact (triangles). The latter is peaked around 0, indicating strong rolling motion. Data of Steven Slotterback and Wolfgang Losert, UMD.



W van Saarloos | UL

ANNOUNCEMENTS

New research group joins the JMBC : Leo Maas | UU

Internal waves: observations and theory

The ocean is stratified in density, because of varying temperature and salinity concentrations. These arise due to spatially non-uniform inputs and variable mixing. The ocean is also stratified in angular momentum, owing to the Earth's rotation. Both stratifications allow for internal waves, waves that have maximal displacements below the surface. These waves propagate throughout the interior of the ocean, and thus transport momentum that may become available 'elsewhere', where it may lead to mixing. This mixing of heat and momentum provides a feedback on the ocean state, as it is of relevance to the slow, large-scale ocean circulation and stratification. Mixing is also important for transport of nutrients, oxygen and other gases, that determine the conditions for life in the sea. Internal waves differ from surface waves in that they propagate under an inclined angle relative to the horizontal. They are special in maintaining their inclination, leading to non-Snellian reflection and wave focusing when reflecting off sloping bottoms. This provides linear internal waves with a multiscale character. In theory, in a confined fluid domain, the waves are predicted to approach a limiting orbit, a wave attractor. Given the stratification and the shape of the sea, the wave motion and wave attractor, while predictable, depend sensitively on these parameters. Laboratory work and field observations are used to complement theoretical and numerical predictions on internal wave motion and internal wave attractors.



LRM Maas | UU & NIOZ



T Gerkema | UU & NIOZ

ERCOFTAC Da Vinci award

On november 19, 2008 the ERCOFTAC Da Vinci Award was granted to Peter Vennemann of the TU Delft.



P Vennemann | TUD

New professor at JMBC : Ruud Henkes | TUD/Shell

Since January 2009, Ruud Henkes is working as a part-time Professor of Multiphase Pipeline Flows within the Department of Multi-Scale Physics at the Faculty of Applied Physics of Delft University of Technology. He is the successor of Prof. dr Rene Oliemans.

He obtained his Engineering Degree in Aerospace Engineering in 1985, and his PhD in Fluid Flow and Heat Transfer (under professor Hoogendoorn) in 1990, both at Delft University of Technology. Thereafter, he worked as Research Fellow of the Royal Netherlands Academy of Arts and Sciences at the faculties of Applied Physics and Aerospace Engineering. In 1997 he took up a position at Shell Global Solutions in Amsterdam, where he currently works as head of the Multiphase Flow Team.

The appointment of Ruud Henkes will forge a strong link between the engineering world of multiphase flow in pipeline systems, particularly the oil and gas industry, and the fundamental research which the Multi-Scale Physics department is conducting in the field of multi-phase flows. His research will focus on fundamentals and applications of transition boundaries between flow patterns in pipelines. Modeling will be done through a range of techniques, starting with simple one-dimensional techniques as currently used in the industry up to multidimensional Computational Fluid Dynamics.

Also a dedicated experimental programme will be set up.

R.A.W.M.Henkes@tudelft.nl , phone 015-2781313 (on Wednesday).

Ruud.Henkes@shell.com, phone 020-6303783.

Meeting of the contactgroup Multiphase Flow

On Thursday 26th November 2009 the Contactgroup Multiphase Flow will organize a day with presentations on the special theme of "Multiphase flow with heat transfer". Venue will be the new office of Shell in Amsterdam. At the end of the day there will be a visit to some of the fluid flow & flow assurance experimental facilities. We are still looking for speakers for the day (both from industries, research institutes, and universities). Please contact the organizers if you are interested.

New chairman and secretary of the Contactgroup are:

prof.dr.ir. RAWM Henkes (Ruud Henkes), R.A.W.M.Henkes@tudelft.nl

dr.ir. NG Deen (Niels Deen), N.G.Deen@tnw.utwente.nl



RAWM Henkes | TUD/Shell

New research group joins the JMBC : Frans van de Vosse | TUE

The research in the group is based on the classical disciplines of fluid dynamics and solid mechanics. Both experimental and computational techniques originating from these two disciplines are employed to obtain fundamental insight in the functioning of the cardiovascular system from a mechanical point of view. Mathematical models as well as in-vitro experimental laboratory models are being developed such that experimentally validated computational methods to simulate blood flow, arterial wall motion and cardiac muscle contraction can be created.

Especially due to our successful effort to combine both experimental and computational studies the Cardiovascular Biomechanics group now is internationally recognized as one of the leaders in the modeling of fluid-structure interaction applied to cardiac and vascular mechanics.

Although the research of the group generally is based on questions originating in and arising from clinical practice, it is fundamental in nature and strongly relies on mathematical modeling. In order to develop, validate, and analyze these models, the group uses and employs advanced experimental techniques like laser-Doppler anemometry (LDA), particle image velocimetry (PIV), ultrasound Doppler (US), micro-sensor technology, and video imaging, as well as modern computational methods, like finite (FEM) and spectral element (SEM) methods.

Apart from the development of computational methods, advanced in-vitro experimental methods and experimental set-ups that mimic segments of the cardiovascular circulation are developed for model validation and determination of the functioning and mechanical properties of cardiovascular tissue. Special attention is paid to the complex constitutive behaviour of blood and biological tissues, including adaptation aspects: Medical decision-making should not (only) be based on short-term outcome but preferably on the long-term result to be expected. For short-term adaptation studies, ex-vivo experimental techniques that enable temporary cultivation of animal arterial segments and hearts are being developed preferably in the group's own laboratory whereas long-term adaptation and remodelling studies have to be carried out in collaboration with research groups that perform clinical (and animal) studies (e.g. azM, ChE, Maxima MC, Erasmus MC, Amsterdam MC, Utrecht MC, and Texas Heart Institute). With respect to the last, also close collaboration with the medical imaging and device industry (e.g. Philips Medical Systems, PIE Medical ESAOTE, RADI medical, Philips Research, Medtronic, and Cordis) is important for the development and application of measurement techniques that enable assessment of the constitutive and adaptive parameters from clinical measurements. Finally, to test the predictive value of the models developed, clinical validation studies need to be carried out together with partners that perform clinical research.

TUE | Cardiovascular Biomechanics Department of Biomedical Engineering (www.bmt.tue.nl)

Office TUE : Alice van Litsenburg (A.J.J.T.Litsenburg@tue.nl | 040 247 4060)

Office University Hospital Maastricht : Els Coenegrachts (ecoen@bmt1.azm.nl | 043 387 4260)



F van de Vosse | TUE | f.n.v.d.vosse@tue.nl | 040 247 4218

Granular and disordered media group | UL

The Granular and Disordered Media group at the University of Leiden investigates the flow and jamming of granular media, foams, suspensions and similar systems, focussing on table top experiments on simple model systems. We are particularly fascinated by the interplay between mesoscopic organization and macroscopic flow features, and we combine 2D and 3D video imaging with various rheological measurements. We work closely together with the theory group of Wim van Saarloos. To give a flavor of our interests, below three examples of our current work are listed.

Grain Flows

We have been interested in various aspects of slow granular flows. We recently created a 'stationary granular fluid' by stirring sand in a container locally and then following the immersion of a probe in a stationary part of the sand further away. We also investigate how weak vibrations lead to a significant change in the flowing behavior of sand.

Foams Flows

In recent years we have studied in detail the flow of 2D foams. We have established that the global (Herschel-Bulkley) rheology of disordered foams is intrinsically different from the drag forces that individual bubbles experience, while ordered 2D foams have global rheologies which essentially follow directly from the local drag forces. This ties in with very exciting and topical theoretical work on flow near the jamming transition. We have also studied the cause of shear banding in these foams, and established a relation between local relaxation times and global rheology.

Suspensions

In order to gain access to the microscopic organization of 3D granular-like systems, we are developing imaging techniques for suspensions of millimetric particles in optically index matched fluid to which a fluorescent dye is added. Scanning a laser sheet through the suspension then allows direct video imaging of slices through the 3D system.



M van Hecke | UL

ANNOUNCEMENTS continued

Cum laude for Hanneke Bluemink | UT



In december 2008 Hanneke Bluemink (UT) received her PhD-degree with cum laude. Subject of her PhD-thesis was "Bubble and particles in a cylindrical rotating flow".

H Bluemink | UT

Cum laude for David Lentink | WUR



In 2008 David Lentink received his PhD-degree with cum laude. Subject of his PhD-thesis was "Flying and swimming". David also received the Dutch Zoölogyprice 2009.

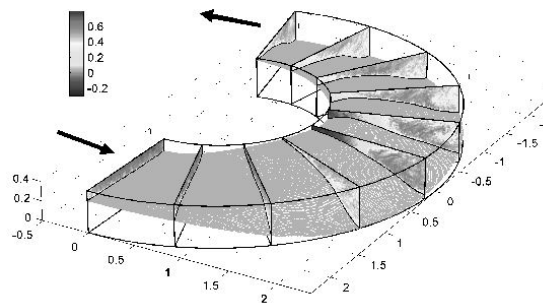
D Lentink | WUR

New chairman for the PhD Contact group

Currently, I am involved in the PhD contact group representing the Environmental Fluid Mechanics group of the faculty of Civil Engineering and Geosciences of the TU Delft. As a PhD student, I study the flow and turbulence features of curved open-channel flows by means of large-eddy simulation (LES). The results of my research are useful for river engineers who deal with complex erosion and sedimentation processes in natural river flow. Within this context, the strength of the secondary motions and the distribution of the wall shear stresses are of our particular interest. The figure below shows the distribution of the streamwise velocities (in m/s) at several cross-sections in a bend (distances in m). The topography of the bottom is represented in the model by means of an immersed boundary method.



W van Balen | TUD | w.vanbalen@tudelft.nl



ANNOUNCEMENTS continued

Grants

The STW perspective programme Clean Combustion Concepts has been honored with 8 projects (total 6 miljoen euro), this gives 15 PhD-positions for Dutch researchgroups in the area of combustion. Prof. De Goeij is programleader.

The group combustion technology has received in 2008 3 STW valorisation grants (2 large and 1 small): Double Combustion Pile Driver (by spin-off company Fistuca, from old student Jasper Winkes, developed into a prototype): 200.000 €, WEDACS (waste energy driven airconditioning system), by phd-student Michael Boot (25.000 €) and WEDACS (waste energy driven airconditioning system), by phd-student Michael Boot (200.000 €).

Ron Heynens wins NVV Combustion award 2008

Ron Heynens has won the Combustion Award 2008 of the NVV (Nederlandse Vereniging voor Vlamonderzoek), the Dutch section of the International Flame Research Foundation (IFRF). Evie Kerkhof got an honourable mention. Ron won this award for his masters thesis on "Rotational effects on laminar combustion. The simulation of the combustion process in the MTT turbine". The award amounts 1000 € and the criteria of the jury were: i) Originality, ii) Industrial feasibility, iii) Social relevance and iv) Quality and scientific level. Ron did his research in cooperation with the firm Micro Turbine Technology, MTT on their revolutionary design of micro-turbines for domestic combined heat and power (CHP) application. The jury contained people from Dutch industries with important combustion applications: Corus, Shell Global Solutions, Stork and TNO. Ron will present his winning research on Combura 2008, the joint conference organised by STW, the NVV and the Dutch Section of the Combustion Institute. At this meeting the prize and the distinction for Ron and Evie, respectively, will be awarded. The master study of Evie Kerkhof was entitled "Application of jatropa oil and biogas in a dual fuel engine for electrification".

Combustion group graduate wins price of Dutch gas industry

Combustion technology group student Alain Verhasselt wins the third graduation price of the Dutch gas industry. The price is an amount of 2000 €. The evaluation was performed by the Royal Society of Science of Holland (Koninklijke Hollandse Maatschappij der Wetenschappen, KHMW). The associated ceremony will be in Zoetermeer on September 30th 2008.



LPH de Goeij | TUE

CALENDAR

PhD students have to participate in at least three JMBC courses, preferably during their first two years. Information about the contents of the courses can be found in the "Course Programme" of the JM Burgerscentrum, available as downloadable PDF file on <http://www.jmburgerscentrum.org> or as hardcopy by sending an e-mail to the secretariat: jmburgerscentrum@tudelft.nl

Overview of the courses for the academic year 2008-2009

23 - 27 March 2009

Turbulence | TUD

Prof.dr.ir. BJ Boersma, prof.dr.ir. J Westerweel, dr.ir. WP Breugem, dr. S Kenjeres, dr.ir. MJB M Pourquie.

The course will give a general overview of the theory of turbulence (including transition) and turbulence modelling techniques such as:

- 1) Closure relations k- ϵ model, algebraic-stress model, Reynolds stress model
- 2) Direct numerical and large eddy simulation
- 3) Stochastic modelling techniques and pdf methods

Emphasis will be on applications in:

- 1) Complex geometries
- 2) Turbulence under the influence of volume forces, for instance rotation and stratification
- 3) Turbulence in compressible flows
- 4) Turbulence in multiphase flows
- 5) Turbulence and chemical reactions

For more information about the contents of the course contact

BJ Boersma | 015 278 7979 | b.j.boersma@tudelft.nl

20 - 24 April 2009

Wetting and capillarity driven flows | UT

Wetting and interfacial tensions play a crucial role for the behavior of fluids on length scales below the capillary length, which is typically of order 1mm. Typical application areas include well-established traditional fields such as coating technology and emulsification as well as recent fields such as microfluidic systems, inkjet printing technology, and immersion lithography. In this course, we will cover the basic theoretical models (lubrication approximation) used to describe thin film flows in coating, wetting, and dewetting flows. We will address the long-standing and still unsolved problem of contact line dynamics, which involves a multi-scale coupling between macroscopic flows and molecular scale processes. We will discuss the strategies of controlling liquids by patterning the wettability of solid surfaces. This will include a first bloc of lectures on passive geometric and chemical surface patterns, which give for instance rise to superhydrophobicity. A subsequent bloc of lectures will be devoted to active surface-stress driven flows, including Marangoni flows, thermocapillarity, as well as electrowetting. In the final bloc of lectures we will address two-phase flows in microchannels, including the characterization of flow patterns, the generation of bubbles and droplets, and the influence of the channel and junction geometry on the flow.

For more information about the contents of the course contact

F Mugele | 053 489 3094 | f.mugele@utwente.nl

CALENDAR continued

October 2009

PIV | TUD

Particle Image Velocimetry has rapidly become the standard method for measuring fluid velocities in both fundamental and applied research. In October 2009, a one-week course will be taught at the Delft University of Technology. NB: this course does not replace the yearly course at DLR. In this course the fundamentals of the technique will be taught, including applications in particular fields: microfluidics, turbulence, multiphase flows and aerodynamics. Next to lectures, there will be a number of practical sessions where the participants can practice their skills and see some state-of-art facilities (e.g. tomographic PIV, high-speed PIV). The course is primarily targeted at PhD students from the JM Burgerscentrum, who will get priority when registering: due to limitations on the available space in the practical sessions, the maximum number of participants is 25. Others interested (postdocs, faculty, researchers from institutes and industry) are welcome to apply as well, but priority is given to JMBC PhD students. Apart from a basic understanding of fluid mechanics, there is no prerequisite knowledge. Detailed, up-to-date information can be found on the website: www.ahd.tudelft.nl/piv/
Confirmed lecturers: prof. dr. ir. J. Westerweel, prof. dr. F. Scarano, dr. ir. C. Poelma, dr.-ing. R. Lindken; more to follow.

Venue: The course is hosted by the Laboratory for Aero & Hydrodynamics, part of the Process & Energy department of the Faculty of Mechanical, Materials and Maritime Engineering (3ME) of the Delft University of Technology.

For more information about the contents of the course contact

J Westerweel | 015 278 6887 | j.westerweel@tudelft.nl

Autumn 2009

CFD of multiphase flows

For single-phase flow, CFD (Computational Fluid Dynamics) has reached such a level that it is now often used for the reliable design and operation of complex geometries of industrial interest. This includes advanced capabilities for grid generation of complex geometries, numerical discretization schemes and solvers, and turbulence modelling. For multiphase flow in wall-bounded equipment, the level of complexity is enhanced significantly compared to single-phase applications. Multiphase flow denotes the combined transport of gas, liquid, and particles. Fortunately, also here much progress has been made to the extent that various successful industrial examples exist. The aim of this 3-day course is to address the possibilities and limitations of CFD for Multiphase Flows.

Various speakers will assess the capabilities of computer simulations for flow conditions of industrial interest. We will review the CFD techniques for multiphase flows in: tubes, fluidized beds, bubble columns, cyclones, and stirred tank reactors. We also pay attention to some environmental multiphase flows, e.g. sediment transport in rivers. A common difficulty is that we have to deal with turbulence affected by walls and by particles. The latter can be bubbles, droplets or solid particles, each with their own peculiarities. At the end of the course the participants will have an overview of the types of CFD methods, with their specific accuracy, that can be used for multiphase flows in industry.

CALENDAR continued

Since the course participants will also get an insight into the current CFD limitations for the industrial flow geometries discussed, it will help them to build realistic expectations for their own specific practical problems, which might be even more complex than the examples treated in the course.

For more information about the contents of the course contact
RAWM Henkes | 020 630 37 83 | ruud.henkes@shell.com

Autumn 2009

Short LDA course | TUD

More information will follow soon.

For more information about the contents of the course contact
MJ Tummers | 015 278 2477 | m.j.tummers@tudelft.nl

2009/2010

Geophysical fluid dynamics and 2D turbulence | TUE

The large-scale motions in the atmosphere and oceans are essentially affected by density stratification of the medium as well as by the planetary background rotation. The course will concentrate on fundamental aspects of rotating and stratified flows, aiming at a better insight in the dynamics of large-scale flows in seas, oceans and planetary atmospheres. Such insight is also useful for a better understanding of industrial flow configurations in which rotating and/or density effects play a role. Topics that will be discussed include: geostrophic flows, conservation of potential vorticity, Ekman boundary layers, spin-up phenomena, wind-driven ocean circulation, waves in rotating and stratified media, density currents, barotropic and baroclinic instability, aspects of two-dimensional turbulence and the dynamics of coherent vortex structures. The course includes a number of laboratory and computer sessions, in which the participants can study aspects of the theoretical material presented and discussed during the lectures. The core lectures will be given by Prof. GertJan van Heijst, and additional lecturers (from TU/e, KNMI, NIOZ, IMAU) will contribute on a number of special topics.

For more information about the contents of the course contact
GJF van Heijst | 030 247 2722 | g.j.f.v.heijst@tue.nl

CALENDAR continued | OSPT - ERCOFTAC - Von Karman Institute Courses

For further information and registration about any of these courses contact the below mentioned organizer.

OSPT courses

Gert Banis
University of Twente
Faculty of Chemical Engineering
OSPT Secretariat
PO Box 217
7500 AE Enschede
Tel : 053 489 3034 / 4626
Fax : 053 489 4738
Email : g.h.banis@utwente.nl
<http://ospt.tnw.utwente.nl>

ERCOFTAC meetings

Dr. Thierry Ursenbacher
ERCOFTAC Coordination Centre
STI-LMF (Bat. ME), EPFL
CH - 1015 Lausanne
Switzerland
Tel : +41 21 693 53 05
Fax : +41 21 693 53 07
Email : ercoftac@epfl.ch
www.ercoftac.org

VON KARMAN INSTITUTE courses

VKI Secretariat
Waterloosesteenweg, 72
B - 1640 Sint-Genesius-Rode
Belgium
Fax : +32 2 359 96 00
Email : secretariat@vki.ac.be
www.vki.ac.be

VACANCIES

Because of the large number of vacancies we would like you to visit our website www.jmburgerscentrum.org to read the vacancies in detail.

TUD

Vacancy no. 8

Full professor vacancy at Aerospace Engineering

Vacancy no. 6

4 PhD-positions at the Aero and Hydrodynamics lab

Vacancy no. 5

Assistant or associate professor in petroleum engineering

Vacancy no. 4

PD-position on Time Integration Methods

TUE

Vacancy no. 18

Part-time professor in heat storage technology

Vacancy no. 17

PhD Position : Optimisation of heat transfer in micro waves

Vacancy no. 16

UD Position : Mesoscopic Transport Phenomena

Vacancy no. 15

2 PhD Postions at Mesoscopic Transport Phenomena

Vacancy no. 14

PhD Postions : Aeroacoustics of corrugated pipes

Vacancy no. 13

Consultancy position at LIME

Vacancy no. 12

PD position : Second generation of integrated batteries

Vacancy no. 11

PD position : Dynamic capillarity in porous media

Vacancy no. 10

PD position : Shell

Vacancy no. 9

PD position : Thermo-acoustic instabilities expertises

Vacancy no. 7

PhD position : Tracers take the tube

Vacancy no. 6

PhD position : Experimental research on the importance of nucleation on heat transfer

Vacancy no. 2-3

2 PhD positions : Novel gas clean-up technology

VACANCIES continued

UT

Vacancy no. 8

UD position : assistant professor

Vacancy no. 7

PhD position: Clustering phase diagram simulation and theory

Vacancy no. 6

3 PhD positions: computational multi-scale modelling

Vacancy no. 5

1 PD position: Modeling of wave-induced sand transport

Vacancy no. 4

1 PD position: Demonstration air-purifying concrete

Vacancy no. 3

2 PD positions: Multiscale modeling of gas-fluidized beds

Vacancy no. 2

PD position: Extreme surface waves

Vacancy no. 1

PhD position: Thermal convection in rotating flows

Industries & Institutes

Vacancy no. 24

NRG : consultants computational fluid dynamics

Vacancy no. 23

Nantes : PhD-position in thesis on grid adaptation and error evaluation

Vacancy no. 22

ECN + CWI : PhD-position in wind turbine park at ECN and CWI

Vacancy no. 21

ESA : postdoctoral internal research fellowship - ongoing vacancy

Vacancy no. 20

KTH : PhD student in turbulent combustion

Vacancy no. 16

NRG : Consultant Computational Fluid Dynamics

Vacancy no. 15

Flow Motion : CFD Engineer

Vacancy no. 14

Stork : Stromingsdeskundige

Vacancy no. 13

ECN : Group leader wind turbine aerodynamics

Vacancy no. 12

Dupont : Aerodynamist

Vacancy no. 8

TNO : Innovator warmte en stroming

Vacancy no. 3

Nederlands Meetinstituut (NMI) : Wetenschappelijk medewerker Flow

Vacancy no. 1

TNO : Flow & Structural Dynamics Engineers & Innovators gezocht - ongoing vacancy

WHO & WHERE

Participating groups and projectleaders

TUD | 015 278 9111

Mechanical Engineering and Marine Technology

Mechanical Engineering - Mekelweg 2 - 2628 CD Delft

- ♦ Prof.dr.ir. J Westerweel 015 278 6887 j.westerweel@tudelft.nl
- Prof.dr. JCR Hunt 015 278 2904 jcrh@cpom.ucl.ac.uk
- Prof.dr.ir. G Ooms 015 278 1176 g.ooms@tudelft.nl
- Prof.dr.ir. BJ Boersma 015 278 7979 b.j.boersma@tudelft.nl
- ♦ Prof.dr.ir. AHM Verkooijen 015 278 6687 a.h.m.verkooijen@tudelft.nl

Marine Technology - Mekelweg 2 - 2628 CD Delft

- ♦ Prof.dr.ir. RHM Huijsmans 015 278 2889 r.h.m.huijsmans@tudelft.nl
- Prof.dr.ir. TJC van Terwisga 015 278 6860 t.v.terwisga@marin.nl

Electrical Engineering, Mathematics and Computer Science

Applied Mathematical Analysis - Mekelweg 4 - 2628 CD Delft

- ♦ Prof.dr.ir. C Vuik 015 278 5530 c.vuik@tudelft.nl
- Prof.dr.ir. P Wesseling 015 278 3631 p.wesseling@tudelft.nl
- ♦ Prof.dr.ir. AW Heemink 015 278 5813 a.w.heemink@tudelft.nl

Applied Science

Multi-Scale Physics - Prins Bernhardlaan 6 - 2628 BW Delft

- ♦ Prof.dr.ir. HEA Van den Akker 015 278 5000 h.e.a.vandenakker@tudelft.nl
- ♦ Prof.dr.ir. CR Kleijn 015 278 2835 c.r.kleijn@tudelft.nl
- ♦ Prof.dr. RF Mudde 015 278 2834 r.f.mudde@tudelft.nl
- Prof.dr.ir. RAWM Henkes 015 278 9111 r.a.w.m.henkes@tudelft.nl
- ♦ Prof.dr. DJEM Roekaerts 015 278 2470 d.j.e.m.roekaerts@tudelft.nl

Physics of Nuclear Reactors

- ♦ Prof.dr.ir. THJJ van der Hagen 015 2782105 t.h.j.j.vanderhagen@tudelft.nl

DelftChemTech - Julianalaan 136 - 2628 BL Delft

- ♦ Prof.dr.ir. MO Coppens 015 278 4399 m.o.coppens@tudelft.nl

Aerospace Engineering

Kluyverweg 2 - 2600 GB Delft

- ♦ Prof.dr.ir. H Bijl 015 278 5373 h.bijl@tudelft.nl
- Prof.dr.ir. F Scarano 015 278 9111 f.scarano@tudelft.nl
- Prof.dr.ir. PG Bakker 015 278 5907 p.g.bakker@tudelft.nl

Civil Engineering and Geosciences

Stevinweg 1 - 2628 CN Delft

- ♦ Prof.dr.ir. GS Stelling 015 278 5426 g.s.stelling@tudelft.nl

WHO & WHERE continued

TUE | 040 247 9111 | PO Box 513 - 5600 MB Eindhoven

Applied Physics

- ♦ Prof.dr.ir. AA Darhuber 040 247 3110 a.a.darhuber@tue.nl
- ♦ Prof.dr.ir. F Toschi 040 247 9111 f.toschi@tue.nl
- Prof.dr.ir. MEH Van Dongen 040 247 3194 m.e.h.v.dongen@tue.nl
- ♦ Prof.dr.ir. GJF Van Heijst 040 247 2722 g.j.f.v.heijst@tue.nl
- Prof.dr. H Kelder 040 247 5212 h.kelder@tue.nl | kelder@knmi.nl
- Prof.dr. HJH Clercx 040 247 2680 h.j.h.clercx@tue.nl
- Prof.dr.ir. BJ Geurts 040 247 4285 b.j.geurts@tue.nl
- ♦ Prof.dr. ATAM de Waele 040 247 4215 a.t.a.m.d.waele@tue.nl

Mechanical Engineering

- ♦ Prof.dr. LPH De Goey 040 247 2938 l.p.h.d.goey@tue.nl
- Prof.dr.ir. RSG Baert 040 247 3167 r.s.g.baert@tue.nl
- Prof. LEM Aldén 040 247 2938 marcus.alden@forbrf.lth.se
- ♦ Prof.dr.ir. JJH Brouwers 040 247 5397 j.j.h.brouwers@tue.nl
- ♦ Prof.dr.ir. AA Van Steenhoven 040 247 2140 a.a.v.steenhoven@tue.nl

Mathematics and Computer Science

- ♦ Prof.dr. RMM Mattheij 040 247 2080 r.m.m.mattheij@tue.nl
- Prof.dr.ir. F Toschi 040 247 9111 f.toschi@tue.nl
- ♦ Prof.dr.ir. CJ Van Duijn 040 247 2855 c.j.v.duijn@tue.nl
- Prof.dr. JJM Slot 040 247 2184 j.j.m.slot@tue.nl

Biomedical Engineering

- ♦ Prof.dr.ir. FN van de Vosse 040 247 4218 f.n.v.d.vosse@tue.nl

UT | 053 489 9111 | PO Box 217 - 7500 AE Enschede

Science and Technology

Chemical Engineering

- ♦ Prof.dr.ir. JAM Kuipers 053 489 3039 j.a.m.kuipers@utwente.nl

Applied Physics

- ♦ Prof.dr. WJ Briels 053 489 2947 w.j.briels@utwente.nl
- ♦ Prof.dr. D Lohse 053 489 8076 d.lohse@utwente.nl
- Prof.dr. A Prosperetti 053 489 9111 prosperetti@jhu.edu
- Prof.dr.ir. L van Wijngaarden 053 489 3086 l.vanwijngaarden@tnw.utwente.nl
- ♦ Prof.dr. F Mugele 053 489 3094 f.mugele@utwente.nl

Electrical Engineering, Mathematics and Computer Science

Mathematical Sciences

- ♦ Prof.dr.ir. EWC van Groesen 053 489 3413 e.w.c.vangroesen@utwente.nl
- ♦ Prof.dr.ir. JWW van der Vegt 053 489 5628 j.j.w.vandervegt@utwente.nl
- Prof.dr. HJH Clercx 053 489 3408 h.j.h.clercx@utwente.nl
- Prof.dr.ir. BJ Geurts 053 489 4125 b.j.geurts@utwente.nl

WHO & WHERE continued

Engineering Technology

Mechanical Engineering

- ♦ Prof.dr.ir. HWM Hoeijmakers 053 489 4838 h.w.m.hoeijmakers@utwente.nl
- Prof.dr.ir. A Hirschberg 040 247 2163 a.hirschberg@tue.nl
- Prof.dr.-Ing.habil GH Schnerr 053 489 4838 schnerr@flm.mw.tu-muenchen.de
- ♦ Prof.dr.ir. ThH van der Meer 053 489 2562 t.h.vandermeer@utwente.nl
- ♦ Prof.dr. S Luding 053 489 4212 s.luding@ctw.utwente.nl

Water Engineering and Management

- ♦ Prof.dr. SJMH Hulscher 053 489 4256 s.j.m.hulscher@utwente.nl

RUG | 050 363 9111 | PO Box 800 - 9700 AV Groningen

Mathematics and Natural Sciences

Chemistry

- ♦ Prof.dr.ir. HB Levinsky 050 363 4544 h.b.levinsky@chem.rug.nl

Mathematics

- ♦ Prof.dr. AEP Veldman 050 363 3988 veldman@math.rug.nl

RUN | 024 361 6161 | PO Box 9010 - 6525 ED Nijmegen

Science

Applied Molecular Physics

- ♦ Prof.dr. JJ Ter Meulen 024 365 3022 h.termeulen@science.ru.nl
- Prof.dr.ir. W Van de Water 040 247 3443 w.v.d.water@tue.nl

UL | 071 527 5505 | PO Box 9506 - 2300 RA Leiden

Mathematics and Natural Sciences

Instituut Lorentz for Theoretical Physics

- ♦ Prof.dr.ir. W van Saarloos 071 527 5501 saarloos@lorentz.leidenuniv.nl

Mathematical Institute

- ♦ Prof.dr.ir. B Koren 020 592 4114 barry.koren@math.leidenuniv.nl

WUR | 0317 477 477 | PO Box 9101 - 6701 BH Wageningen

Applied Mathematics

Biometris

- ♦ Prof.dr. J Molenaar 0317 486042 jaap.molenaar@wur.nl

Experimental Zoology Group

- ♦ Prof.dr.ir. JL van Leeuwen 0317 482267 johan.vanleeuwen@wur.nl

UU | 030 253 9111 | PO Box 80125 - 3508 TC Utrecht

Physics and Astronomy

Institute for Marine and Atmospheric research Utrecht IMAU)

- ♦ Prof.dr. LRM Maas 0222 369 419 maas@nioz.nl

WHO & WHERE continued

JMBC Board of Directors

Prof.dr.ir. H Tijdeman (UT, Chairman)	053 489 2459	h.tijdeman@utwente.nl
Prof.dr.ir. P Wesseling (TUD)	015 278 3631	p.wesseling@tudelft.nl
Prof.dr.ir. DH van Campen (TUE)	040 247 2768	d.h.v.campen@tue.nl
Ir. AJ Dalhuijsen (NMI)	015 269 1500	adalhuijsen@nmi.nl
Prof.dr.ir. G Lodewijks (TUD)	015 278 8793	g.lodewijks@tudelft.nl

Management Team

Prof.dr.ir. GJ van Heijst (TUE)	040 247 2722	g.j.f.v.heijst@tue.nl
Prof.dr. D Lohse (UT)	053 489 8076	d.lohse@utwente.nl
Prof.dr.ir. J Westerweel (TUD)	015 278 6887	j.westerweel@tudelft.nl

Industrial Board

Dr.ir. J Janssen (Unilever)	010 460 6324	jo.janssen@unilever.com
Ir. P Veenstra (Shell)	020 630 3384	peter.veenstra@shell.com
Dr.ir. JF Dijkman (Philips)	040 274 3306	frits.dijkman@philips.com
Dr. RPJ Duursma (Corus)	0251 492 363	rene.duursma@corusgroup.com
Dr.ir. J Baltussen (AKZO-Nobel)	026 366 1479	joop.baltussen@akzonobel-chemicals.com
Dr.ir. G Kwant (DSM)	046 476 1240	gerard.kwant@dsm.com
Ir. JJ Meerman (Teijin Aramid)	026 366 3368	hans.meerman@teijinaramid.com
Dr. HJ Riezebos (Gasunie)	050 521 2583	h.j.riezebos@gasunie.nl
Ir. L Voogt (Verkeer en Waterstaat)	070 311 4233	l.voogt@rikz.rws.minvenw.nl
Ir. G Hommersom (Dow Benelux)	0115 67 4102	ghommersom@dow.com
Ir. M Riepen (ASML)	040 268 3000	michel.riepen@asml.nl
Dr.ir. JHL Absil (TNO-DV)	015 284 3395	absil@pml.tno.nl
Ir. AJ Dalhuijsen (NMI)	015 269 1500	adalhuijsen@nmi.nl
Dr. R Hunik (KEMA NV)	026 356 3289	r.hunik@kema.nl
Dr.ir. HJ Prins (MARIN)	0317 493 405	h.j.prins@marin.nl
Ir. A van Berkel (TNO-IT)	055 549 3759	arij.vanberkel@tno.nl
Ir. G Saccoccia (ESA/ESTEC)	071 565 4781	giorgio.saccoccia@esa.int
Prof.dr.ir. AE Mynett (WL)	015 285 8580	arthur.mynett@wldelft.nl
Dr. B Oskam (NLR)	020 511 3357	oskam@nlr.nl
Ir. H Snel (NRG Petten)	0224 56 4170	snel@nrg-nl.com
Ir. H Vos (TNO)	015 269 2311	hugo.vos@tno.nl
Prof.dr. HB Levinsky (Gasunie)	050 363 4544	h.b.levinsky@chem.rug.nl

PhD students Representatives

S Veldhuizen (TUD)	015 278 7608	s.vanveldhuizen@tudelft.nl
M Boot (TUE)	040 247 5689	m.d.boot@tue.nl
R Wemmenhove (RUG)	050 363 7124	rik@math.rug.nl
A Donkerbroek (RUN)	024 365 3024	a.donkerbroek@science.ru.nl
G Katgert (UL)	071 527 2727	katgert@physics.leidenuniv.nl

WHO & WHERE continued

PhD students Contact Group

TUD	WA Kleefsman	015 278 4372	w.a.kleefsman@tudelft.nl
	F Paravento	015 278 4776	f.paravento@tudelft.nl
	U Kadri	015 278 3210	u.kadri@tudelft.nl
	S van Veldhuizen	015 278 7608	s.vanveldhuizen@tudelft.nl
	WA Breugem	015 278 3365	w.a.breugem@tudelft.nl
	J Harinck	015 278 3120	j.harinck@tudelft.nl
	P Lucas	015 278 2596	p.lucas@tudelft.nl
TUE	M Boot	040 247 5689	m.d.boot@tue.nl
	P Aben	040 247 8304	p.c.h.aben@tue.nl
	WFJ Olsman	040 247 2160	w.f.j.olsman@tue.nl
	P in 't Panhuis	040 247 5515	p.h.m.w.panhuis@tue.nl
UT	J van den Berg	053 489 3418	bergj@ewi.utwente.nl
	A Rahman	053 489 4094	a.rahman@ctw.utwente.nl
	H de Vries	053 489 1187	h.devries@ctw.utwente.nl
	PG Eshuis	053 489 3084	p.g.eshuis@utwente.nl
	I Roghair	053 489 9111	i.roghair@utwente.nl
	LM van der Burgh	053 489 2585	l.m.vanderburgh@utwente.nl
RUG	R Wemmenhove	050 363 7124	rik@math.rug.nl
RUN	J Bominaar	024 365 3013	j.bominaar@science.ru.nl
	A Donkerbroek	024 365 3024	a.donkerbroek@science.ru.nl
LU	G Katgert	071 527 2727	katgert@physics.leidenuniv.nl

JM Burgerscentrum (The Netherlands)

Prof.dr.ir. G Ooms Scientific director	015 278 1176	g.ooms@tudelft.nl
I Hoekstein JMBC Secretariat	015 278 3216	jmburgerscentrum@tudelft.nl

Burgers Program for Fluid Dynamics (University of Maryland, USA)

Prof.dr. James (Jim) M Wallace, Gemstone Program Director
Department of Mechanical Engineering
Chair, Burgers Board, Burgers Program for Fluid Dynamics
University of Maryland
College Park, MD 20742
T 301 314 6695 | F 301 314 8469 | E wallace@eng.umd.edu
www.burgers.umd.edu | www.eng.umd.edu/~wallace

NEW JMBC MEMBER

This form must be filled in by the professor who wants to register the new JMBC member. Send with this form a CV. If he/she is accepted by the JM Burgerscentrum, he/she will automatically be registered and receive an information package from the JMBC. Please return this form to the JMBC secretariat, Mekelweg 2 - 2nd Floor, 2628 CD Delft. Registrations can also be done on-line via www.jmburgerscentrum.org.

Personal

Full name :

General

Name university :

Name (sub)faculty :

Address university / (sub)faculty :

Street / PO Box :

Postal code / City :

E-mail :

Tel. + Fax work :

Position : AIO, OIO, PD, Other :

Duration of study : from till

Title of the project :

Short description of the project :

.....

Sponsored by :

Signature

Herewith I ask the JM Burgerscentrum to register the above mentioned person to the JMBC for the time of his/her study.

Name professorSignature

Date

JMBC PhD COURSES

Title of the course

Date of the course

Full Name

University / Company

Faculty / Department

Section

Address

Postal code and city

Telephone /Fax

E-mail

Officially registered PhD students of the JM Burgerscentrum
150 Euro per course, including course material, lunches, diner, travel expenses, and (if necessary) hotel accommodation.
Does the JMBC have to make hotel reservations? Yes No
(Only for officially registered PhD students of the JMBC)

Other PhD students, scientific staff, post doc's, post-graduate students from other universities
150 Euro per course, including course material, lunches, diner. Travel expenses and hotel accommodation are not included.

Staff members from industries, technological institutes, or other interested persons
250 Euro per course, including course material, lunches, diner. Travel expenses and hotel accommodation are not included.

Signature

Applications within the TU Delft : complete baancode:

Name and signature supervisor:

Registrations can also be done on-line via www.jmburgerscentrum.org.

Applications from outside the TU Delft will receive an invoice. Return this registration form to: JM Burgerscentrum, Attn. Secretariat, Mekelweg 2, 2nd Floor 2628 CD DELFT , Fax + 31 15 278 29 79.

If it is not possible to attend the course, please cancel/unregister as soon as possible. For cancellations received at least two weeks before the start of the course we will not charge you any costs. After that the full amount will be charged.

COLOFON

The JMBC Newsletter is an issue of the JM Burgerscentrum, Research School for Fluid Mechanics.

Editorial office

JM Burgerscentrum
Mekelweg 2 - 2nd Floor
2628 CD Delft
T 015 278 3216
F 015 278 2979
E jmburgerscentrum@tudelft.nl
I www.jmburgerscentrum.org

Design and layout

Ilse Hoekstein - JM Burgerscentrum

Printing

NIVO - Delft
Circulation: 1300 copies

www.jmburgerscenter.org