

## Description and Topics

The ultrasound Doppler method has been successfully established for velocity profile measurements in many scientific and industrial fluid flow applications. Recent trends are the analysis of spatio-temporal and multidimensional flow structures, large-scale measurement in environmental hydraulics, studies of industrial flows such as liquid metal or multi-phase oil flows, and the development of advanced methods for in-line process-control monitoring of rheological properties in flowing food suspensions.

Every ISUD is an opportunity to bring together the researchers from all over the world and to enable the exchange of latest knowledge on the application of the ultrasound Doppler technique. Likewise, there is the chance for researchers, manufacturers and end-users to exchange ideas. Exhibitors and sponsors have the opportunity to promote existing and new products and services. For everyone, it is an opportunity to visit Strasbourg, capital of Europe, and to spend some time enjoying new sights and experiences.

The symposium ISUD-9 will cover a wide range of ultrasonic Doppler applications in liquid metal, waste water, sludge, river, food, etc. The main topics of this edition will be introduced by keynote lectures. These three invited talks will be given by researchers whose contributions to UVP application are widely acknowledged.

## Conference Topics

- **Fundamental Flows**  
Fundamental flow configurations such as jet, wake, mixing layer, boundary layer, natural convection, liquid metal flow, rotating flow, etc.
- **Applied Flows**  
Flow configurations appearing in industrial devices and facilities such as pipe flow, rotating disc, flows in containers, transient flow, rheological flow, multiphase flow, etc.
- **Environmental Flows**  
Flows in nature and man-made structures such as rivers, lakes, channels, around a bridge, harbor, bay, etc.
- **Flow Metering**  
Applications to metering such as flow meter, calibration facilities and metering standards, etc.
- **Flow Mapping**
- **Signal Processing and Methodology**  
New algorithms, new concepts, data display, data analysis, etc.
- **Acoustic Characterization**  
Acoustic properties such as sound speed, attenuation characteristics, sound optics in multiphase flow, acoustic turbidity and particle size distribution, etc.
- **Ultrasound Spectroscopy and Microscopy**



# ISUD-9

## Conference Program

9<sup>th</sup> International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering

August 27-29, 2014



photo: Caroline Claus



# 27th august

8:30 - 9:00	Welcome coffee
9:00 - 9:30	Opening session

## Environmental flow 1 - chairmen: De Cesare / Bareš

9:30 - 10:10	<b>Keynote - Hurther</b> Underwater acoustic scattering and its application to sediment transport physics in coastal and river flows
10:10 - 10:30	<b>Guerrero</b> The investigation of sediment processes in rivers by means of the Acoustic Doppler Current Profiler
10:30 - 10:50	<b>Larrarte</b> Hydraulics and deposit evolution in sewers
10:50 - 11:10	Coffee break
11:10 - 11:30	<b>Kakinuma</b> Study on applicability of ADCP for the field-level hydraulic observation
11:30 - 11:50	<b>Klepiszewski</b> Feasibility Study on the Monitoring of internal Flow and Transport Processes in Combined Sewer Overflow and Waste Water Treatment Structures
11:50 - 12:10	<b>Yorozuya</b> Water Discharge Measurements with ADCP in High Speed Flow with High Sediment Concentration
12:10 - 12:30	<b>Pallarès</b> Acoustic turbidity as online monitoring tool for rivers and sewer networks
12:30 - 13:40	Lunch

## Signal processing 1 - chairman: Takeda

13:40 - 14:00	<b>Coutinho</b> Accuracy evaluation of a crossed beam double element transducer for ultrasound velocity profiler application
14:00 - 14:20	<b>Murai</b> Suitable arrangement of UVP-lines for tomographic monitoring of horizontal gas-liquid two-phase pipe flows
14:20 - 14:40	<b>Nauber</b> Modular Ultrasound Array Doppler Velocimeter with spatial self-calibration for flow mapping in liquid metals
14:40 - 15:00	<b>Seilmayer</b> Noise reduction of UDV measurements in liquid metal experiments with high magnetic fields
15:00 - 15:20	Coffee break

## Applied flow 1 - chairman: Tasaka

15:20 - 15:40	<b>François</b> Experimental study of activated sludge bath settling velocity profile
15:40 - 16:00	<b>Park</b> Ultrasound detection of wall-travelling bubbles for diagnosis of drag reduction
16:00 - 16:20	<b>Furuichi</b> An influence of obstacle plate for uncertainty of flowrate measurement using ultrasonic Doppler method
16:20 - 16:40	<b>De Cesare</b> Flow field UVP measurements of a Y-shape outlet structure
16:40 - 17:00	<b>Franke</b> Electric current pulse driven liquid metal flow studied by the multi-dimensional Ultrasound Doppler array technique
17:00 - 17:20	<b>Nakashima</b> Viscoelastic response of flow driven by a moving permeable disk

18:30 - 19:30 Boat trip on the river Ill (city tour and European Institutions) (\*)

# 28th august

## Fundamental flow - chairmen: Eckert / Wiklund

9:00 - 9:40	<b>Keynote - Tasaka</b> Extraction of fluid and flow information from spatio-temporal UVP data obtained in rotating configurations
9:40 - 10:00	<b>Vogt</b> Experimental investigations of a magnetically driven Tornado-like vortex by means of Ultrasound-Doppler Velocimetry
10:00 - 10:20	<b>Botton</b> Free Jets driven by a plane ultrasound transducer in liquids: experimental and theoretical investigation of acoustic streaming
10:20 - 10:40	Coffee break
10:40 - 11:00	<b>Tasaka</b> Regime diagram of thermal convection in liquid metal with horizontal magnetic field
11:00 - 11:20	<b>Yamaguchi</b> Onset of oscillatory instability in Rayleigh-Bénard convection of a liquid metal layer under a horizontal magnetic field
11:20 - 11:40	<b>Köseli</b> Measurement of Turbulent Fluctuations in Pipe Flow by Ultrasonic Doppler Velocimeter
11:40 - 12:00	<b>Pokorny</b> Mapping of radial velocity component in Taylor Couette flow with Ultrasound Doppler Velocimetry (UVP)
12:00 - 12:20	<b>Shiratori</b> Model-free rheometry based on unsteady velocity profile analysis
12:20 - 13:30	Lunch

## Signal processing 2 - chairman: Windhab

13:30 - 13:50	<b>Kotze</b> Performance tests of a new non-invasive sensor unit and ultrasound electronics
13:50 - 14:10	<b>Ofuchi</b> Extended Autocorrelation Velocity Estimator Applied to Fluid Engineering
14:10 - 14:30	<b>Murakawa</b> Higher flowrate measurement using ultrasonic pulsed Doppler method with staggered trigger
14:30 - 14:50	<b>Muramatsu</b> Improvement in measurement volume in near-wall region using ultrasonic multi-wave pulsed Doppler method for flowrate measurement
14:50 - 15:10	<b>Tsukada</b> Study of Flow measurement by Air-coupled Ultrasound
15:10 - 15:30	Group photo (*)
15:30 - 15:50	Coffee break

## Environmental flow 2 - chairman: Hurther

15:50 - 16:10	<b>Hashiba</b> Field observation of the river flood flow and suspended sediment distribution using ADCP
16:10 - 16:30	<b>Wilson</b> Dynamic analysis of the interaction between unconfined turbidity currents and obstacles
16:30 - 16:50	<b>Bareš</b> Velocity distribution in open-channel flow with intense sediment transport of granular material
16:50 - 17:10	<b>Schatzl</b> Comparison between different instruments for discharge measurements in rivers
17:10 - 17:30	<b>Råman Vinnå</b> A method for using ADCP echo intensity to track particle movements in Lake Biel

20:00 - 22:00 Gala Diner at Maison Kammerzell (\*)

# 29th august

## Applied flow 2 - chairmen: Birkhofer / Kikura

9:00 - 9:40	<b>Keynote - Windhab</b> Potential of Ultrasound-Doppler in process flow measurements along the food value chain
9:40 - 10:00	<b>Meironke</b> Experimental studies of convection flow during the fermentation process of beer by means of Ultrasonic Doppler Velocimetry
10:00 - 10:20	<b>Dufour</b> In-line monitoring of chocolate crystallization by UVP-PD technique
10:20 - 10:40	Coffee break
10:40 - 11:00	<b>Eckert</b> Channel flow profile measurements at hot liquid metal loops by the Ultrasound Doppler method
11:00 - 11:20	<b>Fleckenstein</b> Ultrasonic Characterization of Silt Suspensions by Backscattering
11:20 - 11:40	<b>Starace</b> Liquid Metal Ultrasound Velocimetry in a High Current Environment
11:40 - 12:00	<b>Wiklund</b> Flow-Viz – A fully integrated and commercial in-line fluid characterization system for industrial applications
12:00 - 12:20	<b>Ihara</b> Flow monitoring in molten glass by means of ultrasonic Doppler method

12:20 - 13:30 Lunch  
13:30 - 14:30 Student award - Final speech

15:00 - 17:00 Visit of the Laboratory of Fluid Mechanics (ICUBE) (\*)

(\*) see specific sheet for details