

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

9th International Symposium on Ultrasonic Doppler Methods for Fluid Mechanics and Fluid Engineering

August 27-29, 2014



photo: Caroline Claus



27th august

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

| Environmental flow 1 - chairmen: De Cesare / Bareš | |
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| 9:30 - 10:10 | Keynote - Hurther Underwater acoustic scattering and its application to sediment transport physics in coastal and river flows |
| 10:10 - 10:30 | Guerrero The investigation of sediment processes in rivers by means of the Acoustic Doppler Current Profiler |
| 10:30 - 10:50 | Larrarte Hydraulics and deposit evolution in sewers |
| 10:50 - 11:10 | Coffee break |
| 11:10 - 11:30 | Kakinuma Study on applicability of ADCP for the field-level hydraulic observation |
| 11:30 - 11:50 | Klepiszewski Feasibility Study on the Monitoring of internal Flow and Transport Processes in Combined Sewer Overflow and Waste Water Treatment Structures |
| 11:50 - 12:10 | Yorozuya Water Discharge Measurements with ADCP in High Speed Flow with High Sediment Concentration |
| 12:10 - 12:30 | Pallarès Acoustic turbidity as online monitoring tool for rivers and sewer networks |
| 12:30 - 13:40 | Lunch |

| Signal processing 1 - chairman: Takeda | |
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| 13:40 - 14:00 | Coutinho Accuracy evaluation of a crossed beam double element transducer for ultrasound velocity profiler application |
| 14:00 - 14:20 | Murai Suitable arrangement of UVP-lines for tomographic monitoring of horizontal gas-liquid two-phase pipe flows |
| 14:20 - 14:40 | Nauber Modular Ultrasound Array Doppler Velocimeter with spatial self-calibration for flow mapping in liquid metals |
| 14:40 - 15:00 | Seilmayer Noise reduction of UDV measurements in liquid metal experiments with high magnetic fields |
| 15:00 - 15:20 | Coffee break |

| Applied flow 1 - chairman: Tasaka | |
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| 15:20 - 15:40 | François Experimental study of activated sludge bath settling velocity profile |
| 15:40 - 16:00 | Park Ultrasound detection of wall-travelling bubbles for diagnosis of drag reduction |
| 16:00 - 16:20 | Furuichi An influence of obstacle plate for uncertainty of flowrate measurement using ultrasonic Doppler method |
| 16:20 - 16:40 | De Cesare Flow field UVP measurements of a Y-shape outlet structure |
| 16:40 - 17:00 | Franke Electric current pulse driven liquid metal flow studied by the multi-dimensional Ultrasound Doppler array technique |
| 17:00 - 17:20 | Nakashima Viscoelastic response of flow driven by a moving permeable disk |

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| 18:30 - 19:30 | Boat trip on the river Ill (city tour and European Institutions) (*) |
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28th august

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

| Signal processing 2 - chairman: Windhab | |
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| 13:30 - 13:50 | Kotze Performance tests of a new non-invasive sensor unit and ultrasound electronics |
| 13:50 - 14:10 | Ofuchi Extended Autocorrelation Velocity Estimator Applied to Fluid Engineering |
| 14:10 - 14:30 | Murakawa Higher flowrate measurement using ultrasonic pulsed Doppler method with staggered trigger |
| 14:30 - 14:50 | Muramatsu Improvement in measurement volume in near-wall region using ultrasonic multi-wave pulsed Doppler method for flowrate measurement |
| 14:50 - 15:10 | Tsukada 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 | |
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| 15:50 - 16:10 | Hashiba Field observation of the river flood flow and suspended sediment distribution using ADCP |
| 16:10 - 16:30 | Wilson Dynamic analysis of the interaction between unconfined turbidity currents and obstacles |
| 16:30 - 16:50 | Bareš Velocity distribution in open-channel flow with intense sediment transport of granular material |
| 16:50 - 17:10 | Schatzl Comparison between different instruments for discharge measurements in rivers |
| 17:10 - 17:30 | Råman Vinnå A method for using ADCP echo intensity to track particle movements in Lake Biel |

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| 20:00 - 22:00 | Gala Diner at Maison Kammerzell (*) |
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29th august

| Applied flow 2 - chairmen: Birkhofer / Kikura | |
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| 9:00 - 9:40 | Keynote - Windhab Potential of Ultrasound-Doppler in process flow measurements along the food value chain |
| 9:40 - 10:00 | Meironke Experimental studies of convection flow during the fermentation process of beer by means of Ultrasonic Doppler Velocimetry |
| 10:00 - 10:20 | Dufour In-line monitoring of chocolate crystallization by UVP-PD technique |
| 10:20 - 10:40 | Coffee break |
| 10:40 - 11:00 | Eckert Channel flow profile measurements at hot liquid metal loops by the Ultrasound Doppler method |
| 11:00 - 11:20 | Fleckenstein Ultrasonic Characterization of Silt Suspensions by Backscattering |
| 11:20 - 11:40 | Starace Liquid Metal Ultrasound Velocimetry in a High Current Environment |
| 11:40 - 12:00 | Wiklund Flow-Viz – A fully integrated and commercial in-line fluid characterization system for industrial applications |
| 12:00 - 12:20 | Ihara Flow monitoring in molten glass by means of ultrasonic Doppler method |

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

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| 15:00 - 17:00 | Visit of the Laboratory of Fluid Mechanics (ICUBE) (*) |
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(*) see specific sheet for details