

# Table of Contents

## Keynote Lectures

|   |    |
|---|----|
| <b>Velocity measurements in liquid metal flows using the Ultrasonic Doppler Method: examples and perspectives</b><br>Sven Eckert, G. Gerbeth .....  | 1  |
| <b>Ultrasonic velocimetry and the rheological investigation of complex fluids</b><br>Sébastien Manneville .....   | 7  |
| <b>Series of calibration tests at national standard loops and industrial applications of new type flow-metering system with Ultrasonic Pulse- Doppler Profile-Velocimetry for power plants</b><br>Michitsugu Mori ..... | 13 |

## Papers

|  |    |
|--|----|
| <b>Single-shot Doppler Velocity Estimation using double chirp pulse compression</b><br>Farès Abda, Philippe Schmitt .....  | 21 |
| <b>Open-channel discharge measurement based on Ultrasonic Doppler Velocity Profiling – laboratory experiments</b><br>Vojtech Bares <sup>1</sup> , Jan KrajdI, Jaroslav Pollert ..... | 25 |
| <b>How can computational fluid dynamics improve measuring in real sewers?</b><br>Hossein Bonakdari, Ali Akbar Zinatizadeh .....  | 29 |
| <b>Comparative study of ADV and LDA measuring techniques</b><br>Zdenek Chara, Vaclav Matousek .....  | 33 |
| <b>Flood discharge measurement using ADCP</b><br>Yen-Chang Chen, Su-Pai Kao, Sheng-Reng Yu .....   | 37 |
| <b>Experiments on turbidity currents influenced by solid and permeable obstacles and water jet screens</b><br>Giovanni De Cesare, Christoph D. Oehy, Anton J. Schleiss .....         | 41 |
| <b>ADCP measurements in a reservoir of a run-of-river hydro power plant</b><br>Clemens Dorfmann, Helmut Knoblauch .....  | 45 |

|   |    |
|---|----|
| <b>Influence of bank roughness and inclination on straight channel flows</b>  |    |
| Alexandre Duarte, Koen Blanckaert, Anton J. Schleiss .....  | 49 |
| <b>Velocity gauging with ADCP in rivers with bedload and sediment transport</b>   |    |
| Katharina Fiedler, Theodor Strobl, Franz Zunic, Horst Matthes .....   | 53 |
| <b>Development of Rheometry based on UVP for visco-elastic liquid</b>   |    |
| Naoki Furuya, Yuji Tasaka, Yuichi Murai, Yasushi Takeda .....   | 57 |
| <b>Development of a multiphase flow meter by means of multiple ultrasonic velocity profile measurements</b>                   |    |
| S. Roberto Gonzalez A., Yuichi Murai, Yuji Tasaka, Yasushi Takeda .....   | 61 |
| <b>Liquid metal Taylor-Couette experiment on the magnetorotational instability</b>  |    |
| Thomas Gundrum, Frank Stefani, Gunter Gerbeth, Jacek Szklarski, Günther Rüdiger, Rainer Hollerbach .....                      | 65 |
| <b>Instantaneous three-dimensional flow structure in a suction sump by 3D-PTV and UVP measurements</b>                        |    |
| Katsuya Hirata, Yuki Nakatani, Katsuhisa Inagaki, Jiro Funaki .....   | 69 |
| <b>A comparative study on near-field flow structures in a circular free jet and a square free jet</b>                         |    |
| Yoshihiro Inoue, Kunikazu Kondo, Shintaro Yamashita .....   | 73 |
| <b>Study on ultrasonic velocity profile measurement in vapor-water two-phase flow</b>   |    |
| Daisuke Ito, Hiroshige Kikura, Masanori Aritomi, Michitsugu Mori .....  | 77 |
| <b>Effect of standing baffle on the structure of flow in a rectangular open channel</b>                                       |    |
| Hamidreza Jamshidnia, Yasushi Takeda .....  | 81 |
| <b>Application of acoustic Doppler Velocimetry in microbubble containing water</b>  |    |
| Lennart Jönsson .....   | 85 |
| <b>Application of linear ultrasonic array transducer to two-phase flow measurements</b>                                       |    |
| Hiroshige Kikura, Takuya Hayashida, Daisuke Ito, Masanori Aritomi, Michitsugu Mori .....                                      | 91 |
| <b>Development of ultrasonic streamflow monitoring system using an existing low head broad-crested agricultural small dam</b> |    |
| Donggu Kim, Chanjoo Lee, Won Kim .....  | 95 |

|  |     |
|--|-----|
| <b>Rheological characterisation of highly concentrated mineral suspensions using an ultrasonic velocity profiler</b><br>Reinhardt Kotzé, Rainer Haldenwang, Paul Slatter .....                   | 99  |
| <b>Numerical prediction of compound channel flow in comparison with ultrasonic Doppler method measurement</b><br>Jan Krupicka, Vojtech Bares, Jakub Jirak, Petr Sklenar .....                    | 103 |
| <b>Suspended solids and attenuation of ultrasonic beams</b><br>Frédérique Larrarte, Pierre François .....  | 107 |
| <b>Discharge estimation using partially measured ADV data</b><br>Chanjoo Lee, Won Kim, Chiyong Kim, Donggu Kim .....   | 111 |
| <b>Turbulence and free surface flow at relevant Froude number</b><br>Sandro Longo .....  | 115 |
| <b>Vortices at intake works of pump-storage schemes</b><br>Rémi Martinerie, Michael Müller, Giovanni De Cesare, Jean-Louis Boillat .....   | 119 |
| <b>Flume flows between boundaries of very different roughness: evaluation of friction using ADV measurements</b><br>Vaclav Matousek, Tomas Picek .....   | 123 |
| <b>Contact measurement of turbulent intensity of the pipe flow using UVP</b><br>Hisato Minagawa, Tomoki Ishida, Takahiro Yasuda .....  | 127 |
| <b>Non-Newtonian fluid flow in elastic tubes</b><br>S. Nahar, B.H. Birkhofer, S.A.K. Jeelani, E.J. Windhab .....   | 131 |
| <b>Experimental study for thermal striping in LBE loop by using UVP with high-temperature ultrasonic transducer</b><br>Hironari Obayashi, Kenji Kikuchi .....                                    | 135 |
| <b>Boundary layer measurement of a vessel sailing over the sea</b><br>Shoko Ohta, Akinari Shigetomi, Yuji Tasaka, Yuichi Murai, Yasushi Takeda, Munehiko Hinatsu, Yoshiaki Kodoma .....          | 139 |
| <b>Application of the Ultrasound Doppler method for velocity measurements in an electromagnetically-stirred liquid metal</b><br>Dirk Rübiger, Sven Eckert, G. Gerbeth .....                      | 143 |
| <b>Uncertainty of ADCP spatial velocity distributions</b><br>Colin D. Rennie .....   | 147 |
| <b>Instrumental development and characterization for loaded liquid flow measurement</b><br>Philippe Schmitt, Farès Abda, Anne Pallarès, Stéphane Fischer, Denis Ensminger, Pierre François ..... | 151 |