

BMEGEÁTMW03 FLOW MEASUREMENTS

Laser-optical measurement techniques for flow characterization

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Contents, main topics of the lecture:

- Introduction, basic questions: what to measure, why..., how...
- What do we need to know about lasers, optics, fluid dynamics, two-phase flow, data acquisition, processing

- Lasers
- Advantage / disadvantage of the technique
- Limits of the technique
- Characterization of particle-laden mixtures
- Particle dynamics, equation of motion
- Seeding / tracer problematic

- Further on: LDV, PDA, PIV, PTV(S)

Suggested hadout, books, literatures:

Website of Dept. Fluid Mech for this subject:

<http://www.ara.bme.hu/oktatas/tantargy/NEPTUN/BMEGEATMW03/2010-2011-II/>

Springer Handbook of Experimental Fluid Mechanics

(Eds.: Tropea, Yarin, Foss), ISBN 978-3-540-25141-5 (Springer-Verlag Berlin 2007)

Measurement Techniques in Fluid Dynamics – An Introduction

(VKI Lecture Series 2001)

Advanced measurement techniques

(VKI Lecture Series, 1998.)

Optical velocity measurements

(VKI Lecture Series 1994.)

Laser Doppler Velocimetry

(Dantec website: www.dantecdynamics.com)

Particle Image Velocimetry - A Practical Guide

(Eds.: Raffel/Willart/Kompenhans) Springer-Verlag, Berlin 1998, ISBN 978-3-540-72307-3

Flow Visualization - Techniques and Examples

(Eds.: Smits&Lim), Imperial College Press, London, 2003

Laser Doppler and Phase Doppler Measurement Techniques

(Albrecht, Damaschke, Borys, Tropea: Springer-Verlag)

Laser Techniques and Applications in Fluid Mechanics

(Springer Verlag ISBN 3-540-56879-4)

Speckle Metrology (Eds: R.S. Sirohi, , Marcel Dekker, New York, 1993, ISBN 0-82478-932-6

Holographic Interferometry: Principles and Methods

(Kreis) Akademie Verlag, 1996, ISBN 3-05501-644-0

Handbook of Holographic Interferometry

(Kreis) Wiley-VCH, Weinheim 2005, ISBN 3-527-40546-1

Optical Measurement Techniques and Applications

(Ed. Pramod K. Rastogi); Artech House 1997, ISBN 0-89006-516-0