FAKULTÄT FÜR MASCHINENBAU
LEHRSTUHL FÜR HYDRAULISCHE STRÖMUNGSMASCHINEN
Prof. Dr.-Ing. Romuald Skoda

RUHR
UNIVERSITÄT
BOCHUM

Lecture Announcement Summer Term 2026

Introduction to Fluid-Flow Measurement Techniques

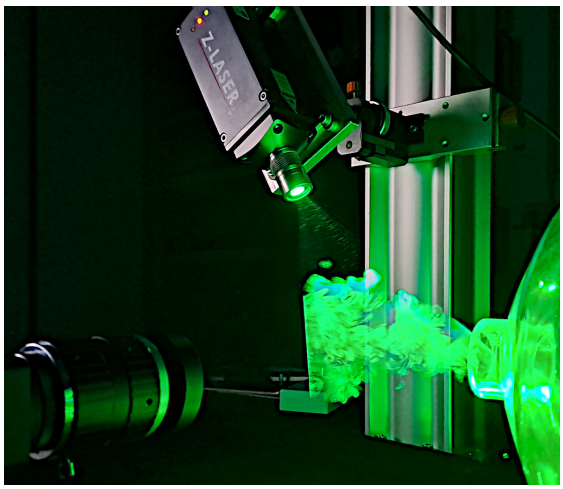

Figure 1: Measurement setup for planar particle image velocimetry (PIV).

After attending this module the student will understand state-of-the-art concepts and methods of fluid flow measurement techniques and their applications in engineering sciences. The student will be in a position to select an appropriate measurement technique for a given problem. Through mandatory laboratory exercises the student will gain hands-on experience in setting up the measurement system and performing the measurements. Additionally, the student will have the ability to perform a thorough data analysis of the acquired measurement signals including an analysis of the associated measurement uncertainties.

Contents

- Flow visualization techniques (e.g. surface flow visualization, tracer based visualization, optical methods: shadowgraphy, schlieren, interferometry)
- Pressure measurements (e.g. pressure sensors and transducers, surface pressure measurements, pressure probes)
- Velocity measurements (e.g. multi-hole probes, hotwire anemometry, optical methods: Laser-Doppler-Anemometry, Particle-Image-Velocimetry)
- Temperature measurements (e.g. thermocouples, resistance thermometers, surface temperature measurements)
- Signal-/ Data analysis including error analysis
- Test facilities

Literature/Teaching Materials:	Manuscripts for lecture and laboratory exercises are available in English. Further literature will be recommended during the lecture.
Dates:	Lecture and exercises: Tuesday, 12:15 – 13:45, IC03/414. Thursday, 12:15 – 13:45, IC03/410.
Start of Lectures:	Tuesday, 14 April 2026
Exam Date and Format:	to be dated, presentation plus oral exam in English or optionally in German

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