

# Particle- Image Velocimetry (PIV) Workshop

10-14 October 2022

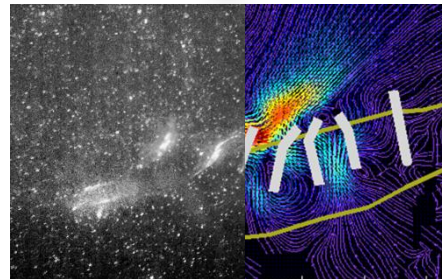
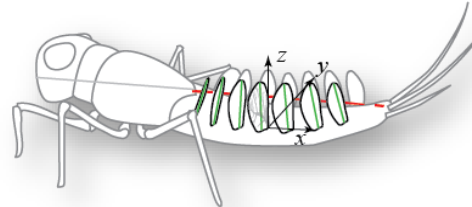
*Location:* Technical University of Delft (TUD), Delft, The Netherlands

*Coordinators:*

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*Lecturers:*

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Particle Image Velocimetry is a measurement technique able to determine the instantaneous velocity field in a planar or volumetric domain. It is widely applied in both fundamental and applied fluid mechanics research. The course discusses the fundamentals of the technique and examples of specific applications, including typical problems in microfluidics, turbulence, multiphase flows and aerodynamics. Next to the lectures, a number of practical sessions will be organized, where the participants can practice their skills and see some state-of-art facilities (e.g., tomographic PIV, high-speed PIV). The course is primarily targeted at PhD students of the JM Burgerscentrum, with priority on registration. Due to limitations on the available space in the practical sessions, the maximum number of participants is set to 35. Other interested researchers (postdocs, faculty, researchers from institutes and industry) are welcome to apply as well.

Apart from a basic understanding of fluid mechanics, no prerequisite knowledge is required. Discussion topic:

- PIV system components: tracers, lasers, optics, cameras.
- Measurement fundamentals: cross-correlation, image density, loss-of-pairs.
- Measurement regimes: stereoscopic PIV, multiphase flows, microfluidics, high-speed systems, volumetric methods (e.g., 3D-PTV, tomographic PIV).
- Data processing techniques: multi-pass correlation, multigrid methods, deforming windows, correlation averaging, multi-frame methods.
- Data reduction and post-processing: vector validation, estimation of vorticity, detecting coherent structures, uncertainty quantification.

Experimental design and lab demos are given in practical sessions.

The Burgers Program for Fluid Dynamics will provide financial support for several PhD students from the University of Maryland to attend this workshop. The application period is now closed.

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