

Advances in Experimental Fluid Dynamics from a Data Science perspective

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Abstract: The experimental investigation of flowing media has seen vast progress within the last few decades. Techniques have been developed for the visualization and quantification of three-dimensional fields of velocity, pressure, density and sound emission for a huge variety of flows. The demands in computational and storage resources, as well as mathematical modelling, have increased manifold at the same time.

This talk will introduce the latest developments in 3D Lagrangian Particle Tracking and its post-processing techniques based on Data Assimilation and Machine Learning, as well as on Beam Forming techniques working with thousands of measurement microphones to yield unprecedented resolution of sound sources.

Bio: Dr. Daniel Schanz is a physicist and permanent researcher at the German Aerospace Center in Göttingen. His work focuses on optical 3D flow measurements, initially developing techniques for tomographic PIV, before he - together with Prof. Andreas Schröder - expanded the application of Lagrangian Particle Tracking to dense particle clouds with the introduction of the 'Shake-The-Box' (STB) algorithm. Currently he focuses on further advancing the STB scheme and extending the limits of its application.