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**New measurement technique for turbulent flow as a replacement for hot-wire anemometry** JAROSLAW PUCZYLOWSKI, MICHAEL HÖLLING, JOACHIM PEINKE, ForWind, Institute of Physics - University of Oldenburg — We present latest developments of the 2d-Laser Cantilever Anemometer (2d-LCA), a sensor, which has been developed for highly resolved measurements of turbulent flows. Its measuring principle allows for high temporal resolutions of beyond 50kHz at spatial scales in sub millimeter range. This performance is achieved by measuring the deformation of a tiny cantilever via laser pointer, which experiences drag forces caused by the flow. The cantilever features two deformation modes, i.e. bending and twisting, whereas the latter occurs only for oblique inflow. Thus the sensor is capable of measuring two velocity components. Latest developments focus on the design of the cantilever. For example, an additional structure for a better sensitivity towards cross winds and an improved reflection pad were realized. Further improvements concern the laser beam guiding within the sensor. Beside this we are in the process of setting up advanced electronics and new types of PSD-elements with the goal of increasing the sensitivity. Comparison measurements between the re-designed 2d-LCA and older versions were performed and showed improvements relating signal quality and reliability. Further measurements in turbulent flow with an x-wire as a reference confirmed the ability of the new sensor to carry out measurements at comparable high resolutions.

Jaroslav Puczyłowski  
ForWind, Institute of Physics - University of Oldenburg

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