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Laser Cantilever Anemometry for highly resolved velocity measurements in fluids JAROSLAW PUCZYLOWSKI, University of Oldenburg, MEASUREMENT SCIENCE ENTERPRISE MSE COLLABORATION — Laser Cantilever Anemometry is a new and high-resolution measurement method for determining the velocity vector of a fluid. A micro-structured silicon cantilever serves as a drag body that is set into the flow. The forces acting on the cantilever, which are exerted by the moving fluid particles, cause the cantilever to bend or twist. With the help of the laser pointer principle, this deformation can be detected and finally recalculated into a velocity vector in two dimensions. The measuring principle is characterized by a very high temporal and spatial resolution (approx. 100m at 100kHz). In the recent past a sensor was developed and tested, which uses this measuring method. The so-called 2d-LCA (2d-Laser Cantilever Anemometer) was extensively and successfully used under different laboratory conditions. The current version of the 2d-LCA has the size of a highlighter and is operated via USB-C or Bluetooth. This compact design is extremely portable and allows the use in difficult to access areas. In addition, all hardware components of the 2d-LCA are made of Invar (Alloy36), which has a very low coefficient of thermal expansion. This avoids heat-related drift and leads to a very stable signal. At the The 72nd Annual Meeting of the American Physical Society's Division of Fluid Dynamics (DFD), the measuring principle of the 2d-LCA will be explained in more detail and measurement results will be presented.

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