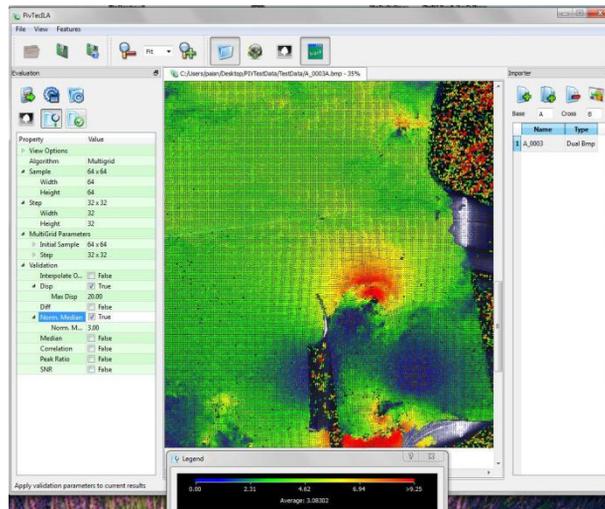


DATA

PIVTecILA - PIVView



ILA is collaborating with the company PIVTec. ILA and PIVTec decided to merge their software development, so that ILA now uses the cross-correlation core of the very well known PIVView software (developed by Chris Willert from DLR) which was top rated at the PIVNet challenge 2005. The PIV evaluation software runs on all operating systems.

The images acquired by our ILA_Camware software are processed by PIVTecILA or PIVView. In most of the cases the parameters for data evaluation are very similar at each individual plane and need to be adjusted only once. The masking of oversaturated areas should be minimal for the new ILA.sCMOS cameras but can be provided as well in the software. After storing these parameters a batch program is launched distributing the images to the available cores of the PC. Here each image pair is dedicated to one core, so that for future applications the processing power scales linearly with the amount of cores available.

After processing the data, all the individual data sets are available in ASCII (*.dat) TecPlot readable format and in NetCDF (*.nc). In addition the averaged data file can include user selectable parameters like vorticity, shear strain and many more, which are generated during the evaluation procedure. These data files can be processed by any known presentation software. We recommend software packages like e.g. TecPlot, Enight or the open source software ParaView.



Specifications

For a standard PIV server system with 24 cores the following table shows a typical benchmark:

Hardware	Algorithm	Time in s
24 core PC (3.2GHz)	2C Multigrid 64x64 to 32x32 (300, 2kx2k)	178
24 core PC (3.2GHz)	2C Multigrid 64x64 to 16x16 (300, 2kx2k)	284
24 core PC (3.2GHz)	3C Multigrid 64x64 to 32x32 (300, 2kx1.4k)	238
Notebook (i7-1.6GHz)	2CMultigrid 64x64 to 32x32 (150, 2kx2k)	1148
Notebook (i7-1.6GHz)	3C Multigrid 64x64 to 32x32 (8, 2kx1.4k) (150, 2kx1.4k)	101 1549

Notes: 2C: Calculation of In-plane vector components
 3C: Calculation of all 3 vector components in a 2D-plane
 32x32 or 16x16: Final interrogation size in pixels
 (300, 2kx2k): Nr. of processed image pairs and image/camera resolution

Accuracy:

During the PIVNet challenge 2005 the low measurement uncertainty of the DLR correlation methods was proven. In the meantime the software was improved even more and new features were added, like e.g. a least square pattern matching algorithm for deformation measurements of surfaces, which can be applied as well to flow images.

In general the measurement uncertainty of stereo PIV can be estimated to be in the range from ~1% and 3%, if the setup is done accurately (see: Kallweit, Willert, Dues, Lederer, International Symposium on Applications of Laser techniques to Fluid Mechanics, 2008).