

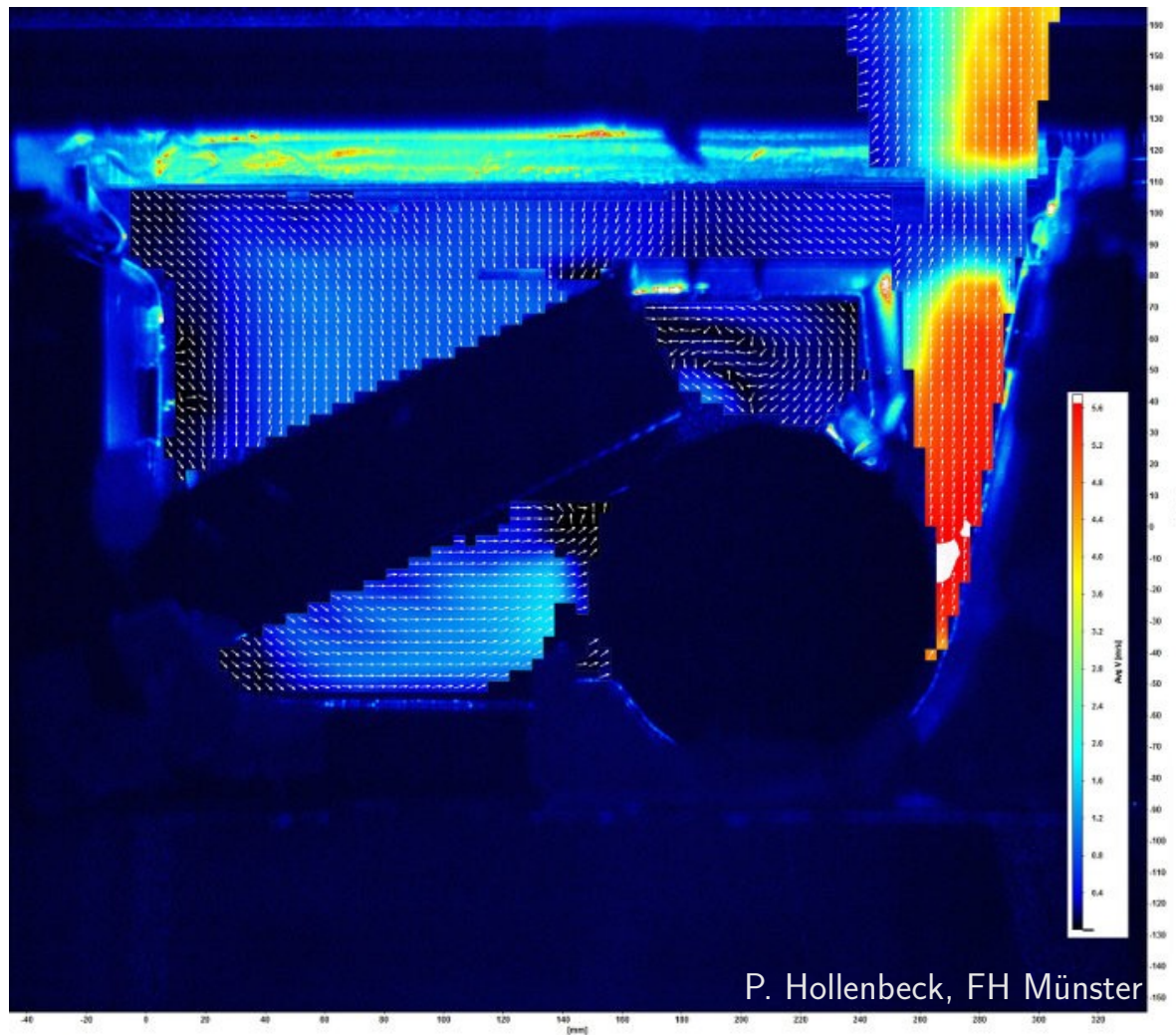


Particle Image Velocimetry (PIV) in der Raumlufttechnik

Prof. Dr.-Ing. Peter Vennemann



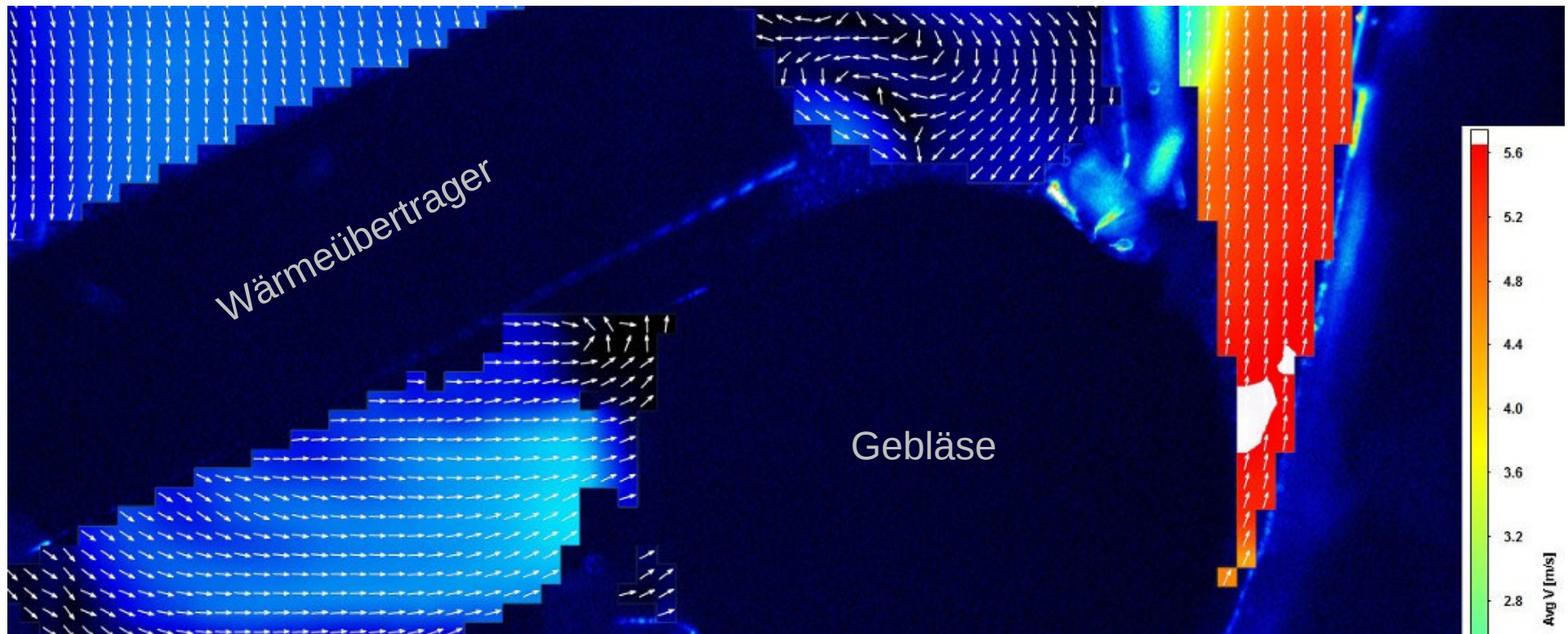
Leistungsoptimierung eines Bodenkonvektors



keine Simulation ...

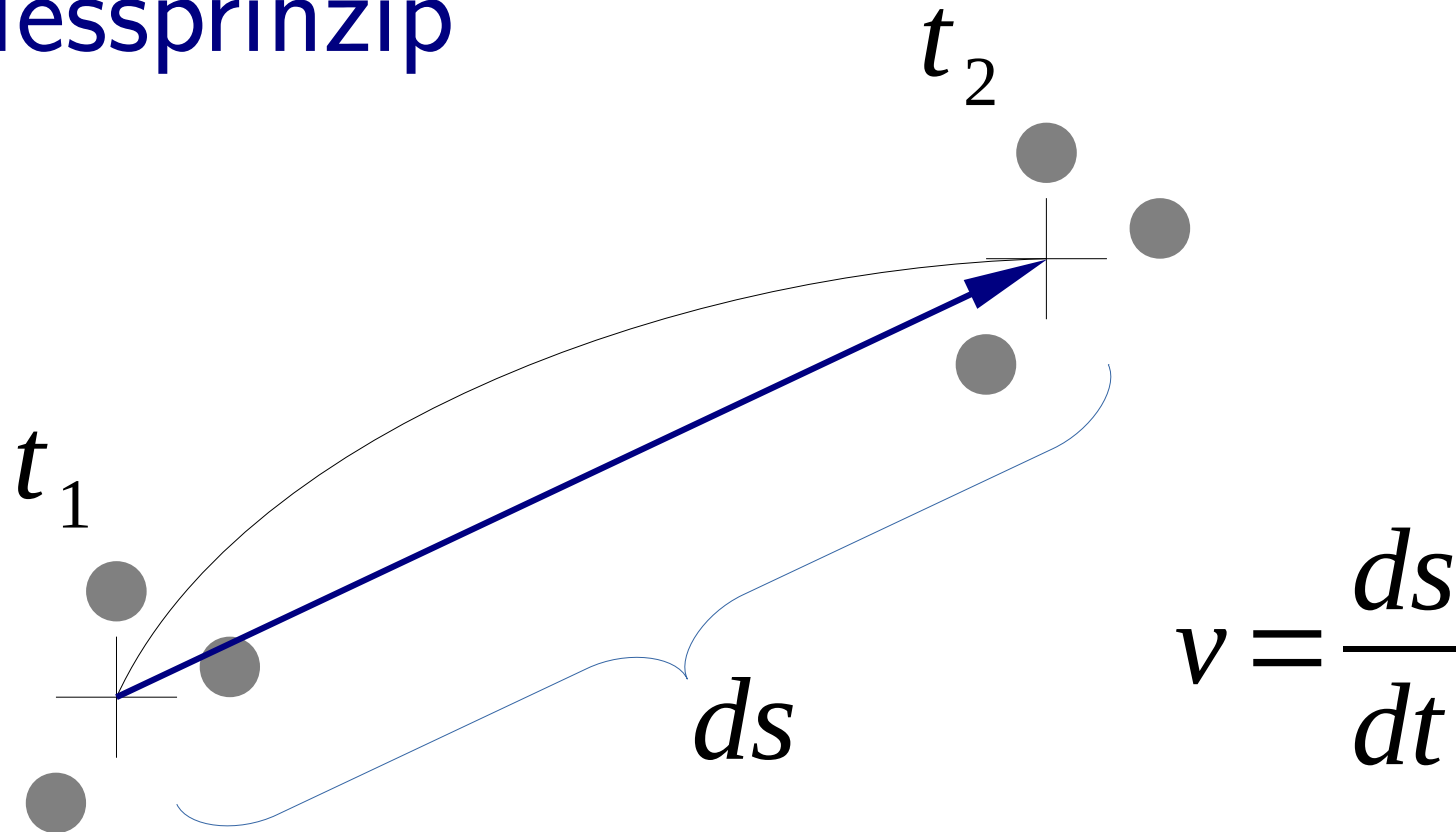
Leistungsoptimierung eines Bodenkonvektors

... sondern zweidimensionale Messung der
Geschwindigkeitsverteilung





Messprinzip

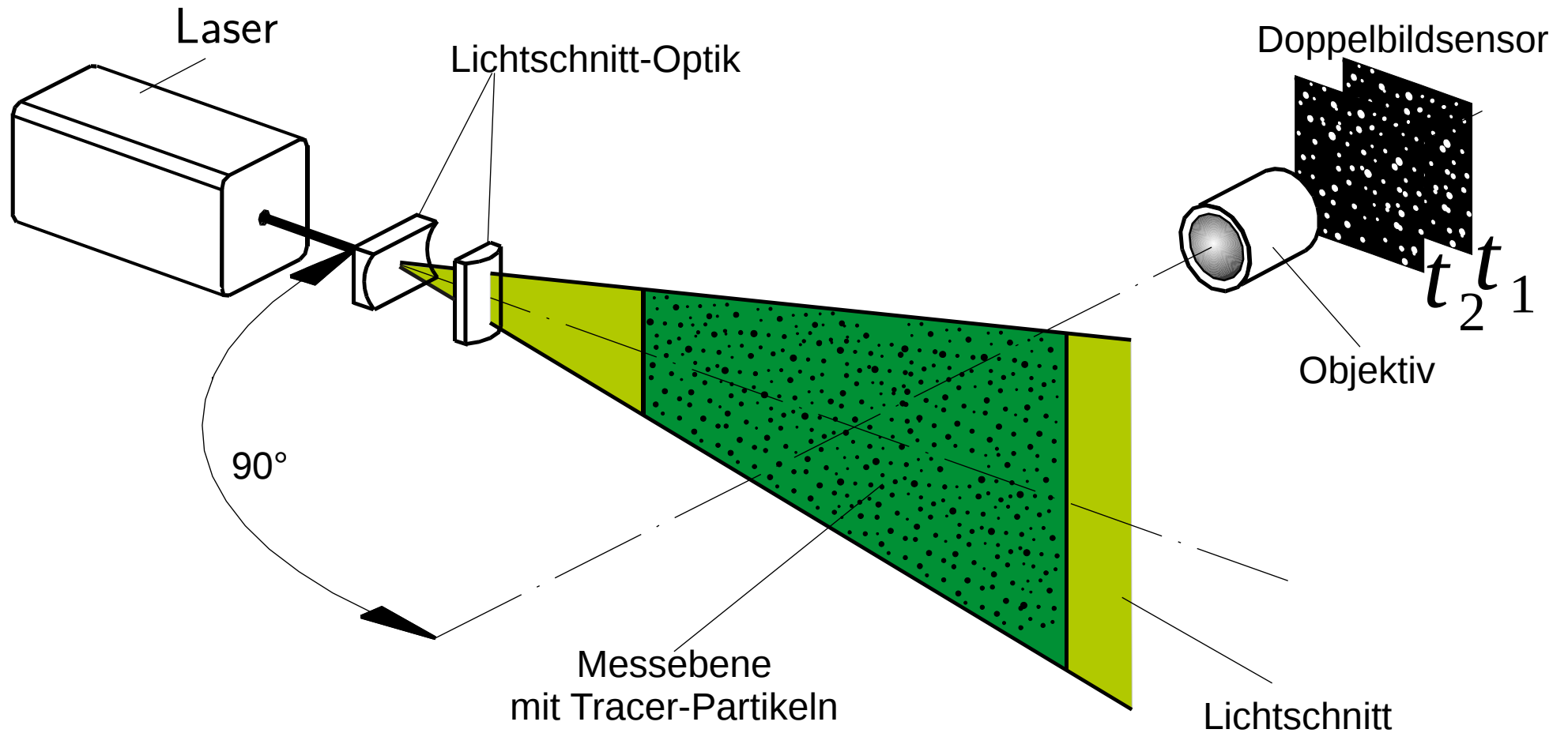


Zeitmessung → Zwei Partikelfotos mit definiertem Zeitabstand

Wegmessung → Erkennung der Verschiebung von Partikelmustern in beiden Bildern mittels Kreuzkorrelation



Typischer PIV Aufbau



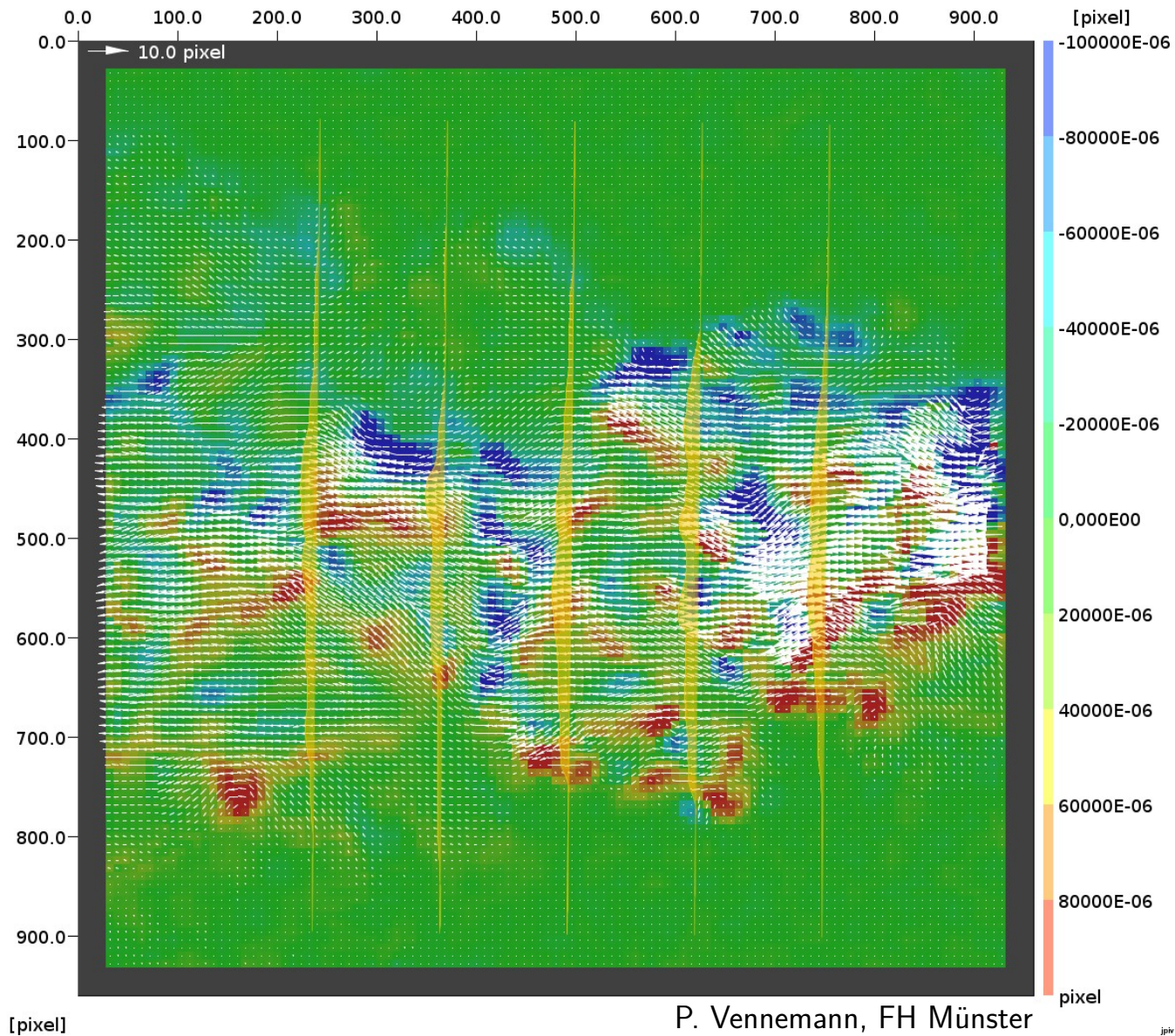


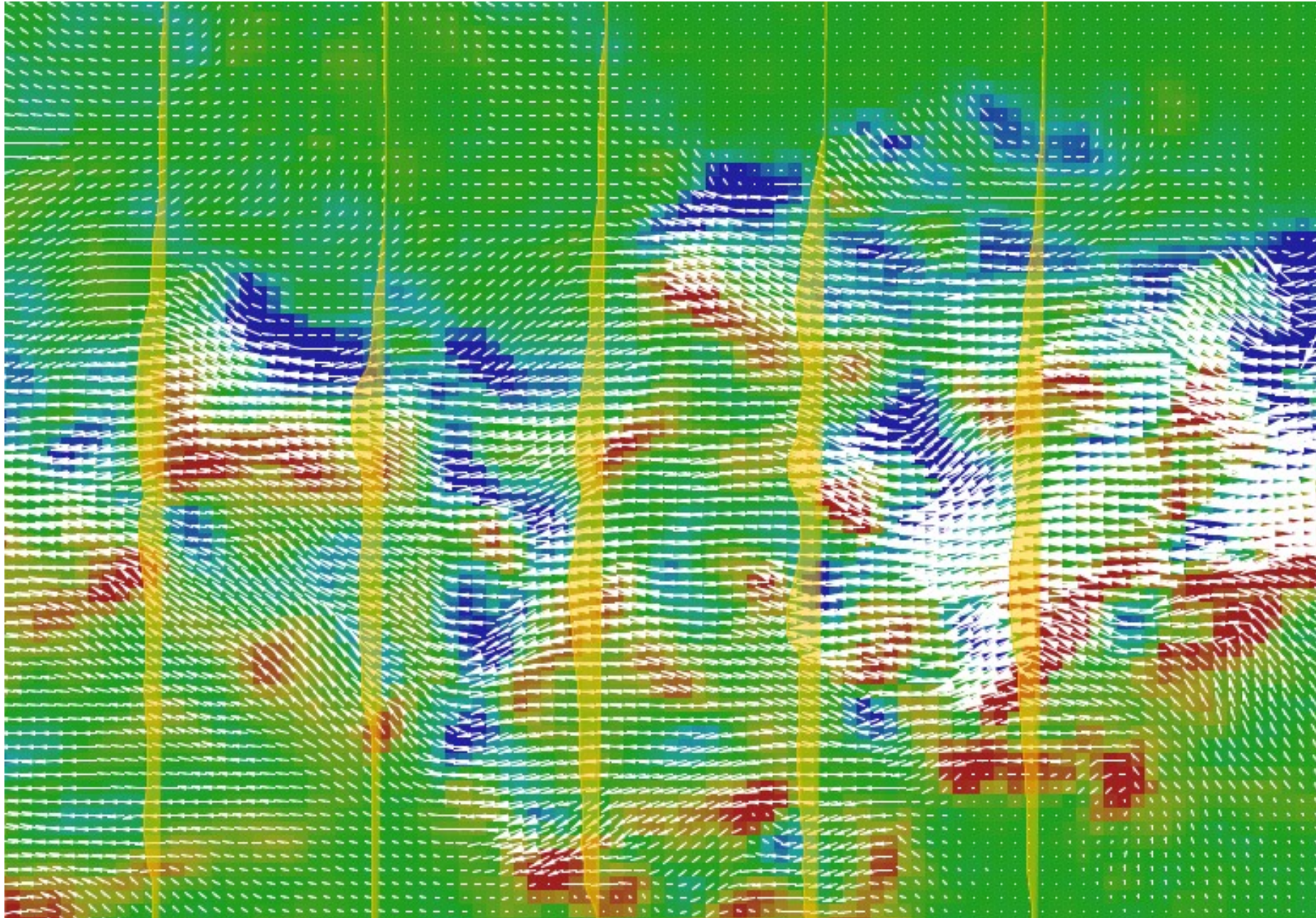
Weitere Beispiele





PIV-Auswertung eines Freistrahls

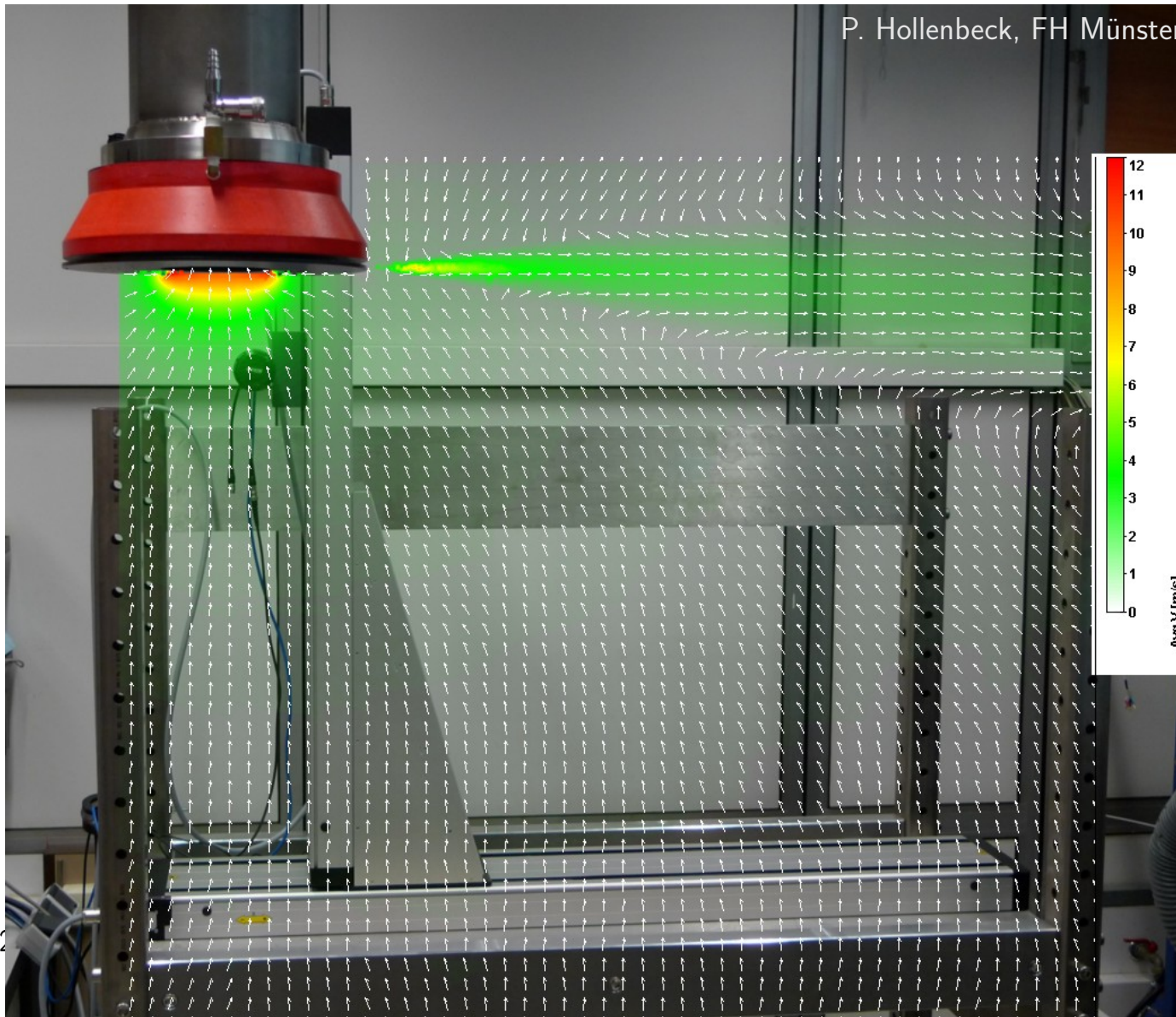




Untersuchung einer Aaberg-Absaugung



P. Hollenbeck, FH Münster





Messfeldgröße?



Wirbelsturm $> 16\ 000$ km

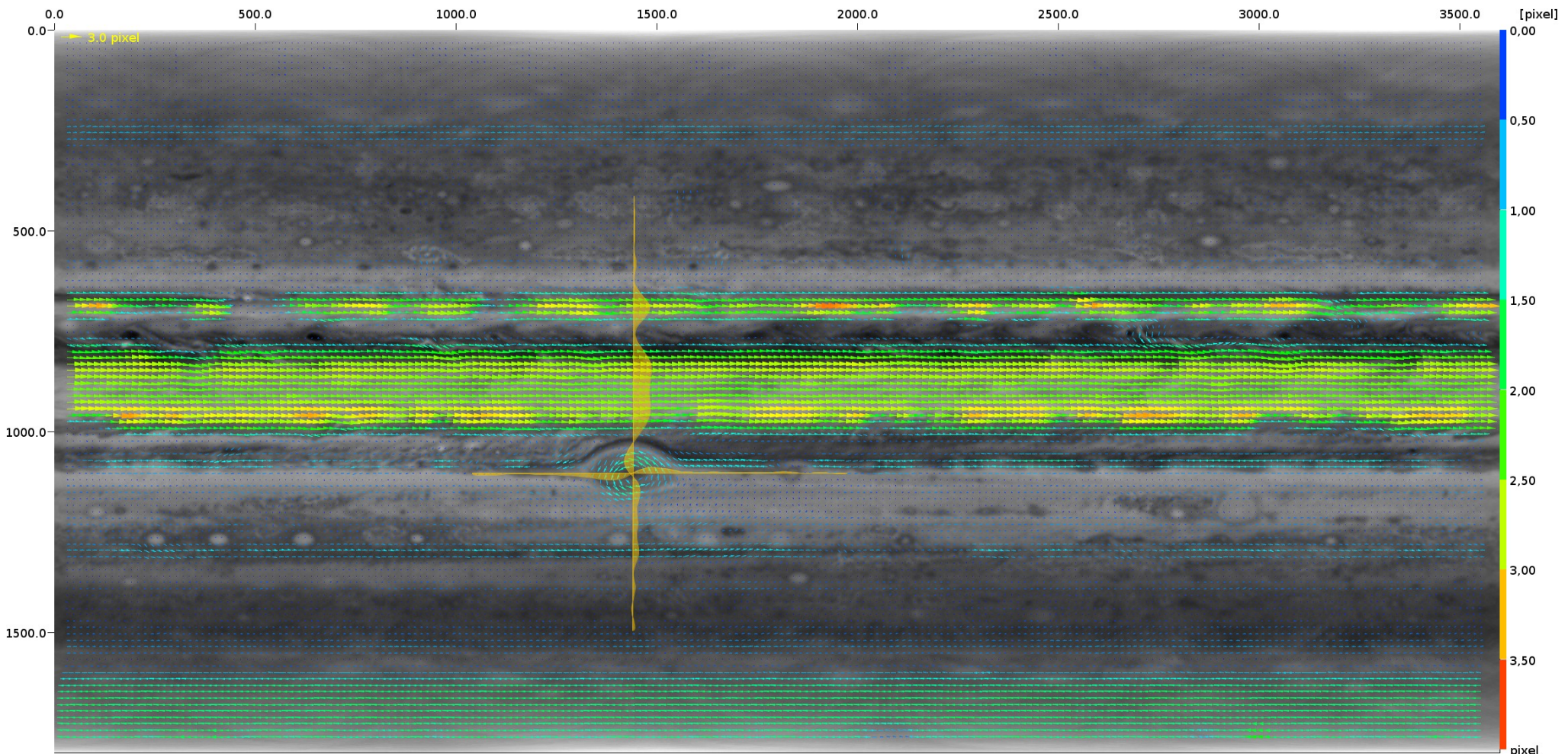
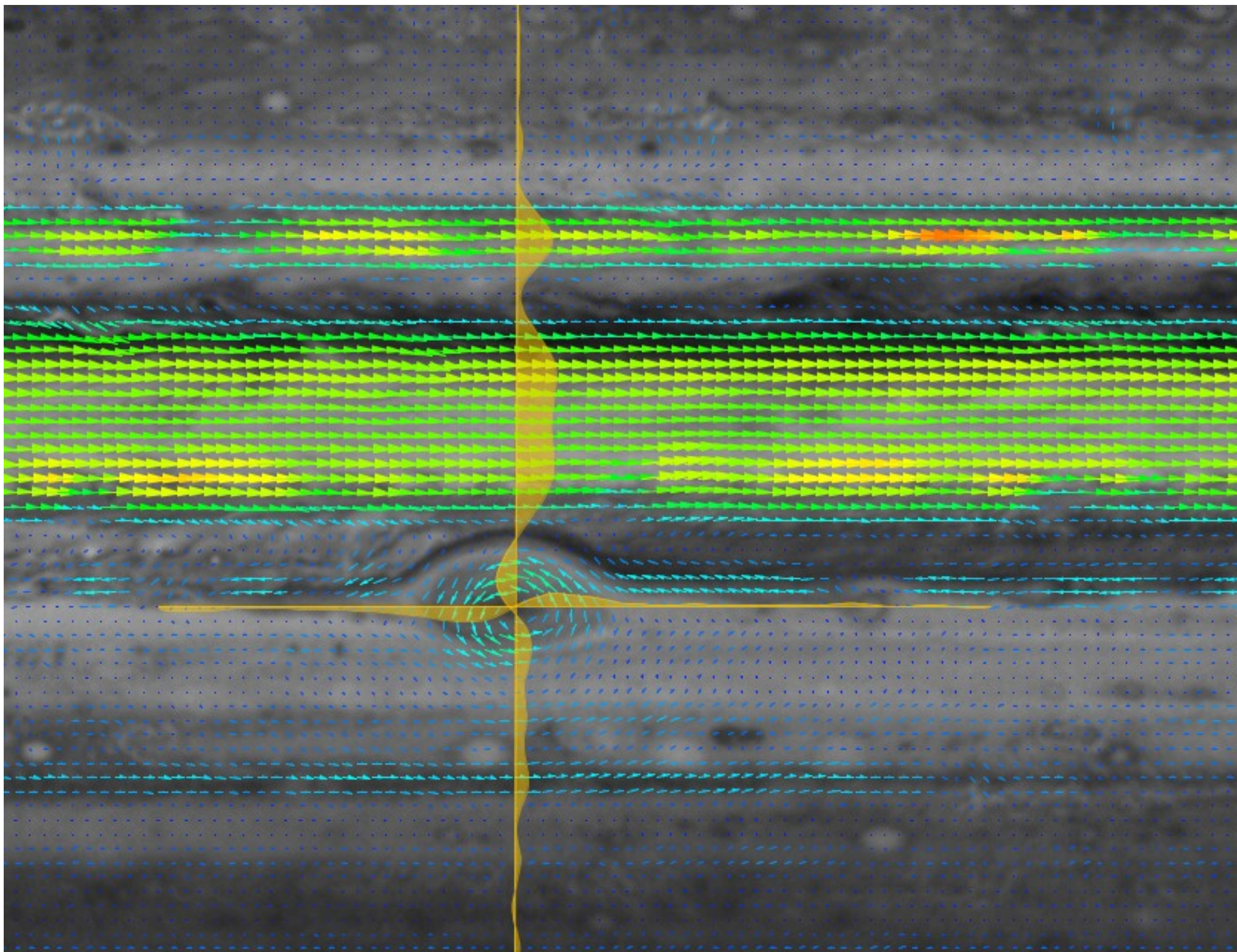


Foto: NASA Space Flight Center, Scientific Visualization Studio, Cassini Imaging Team

PIV: P. Vennemann, FH Münster





Embryo-Herz < 300 μm

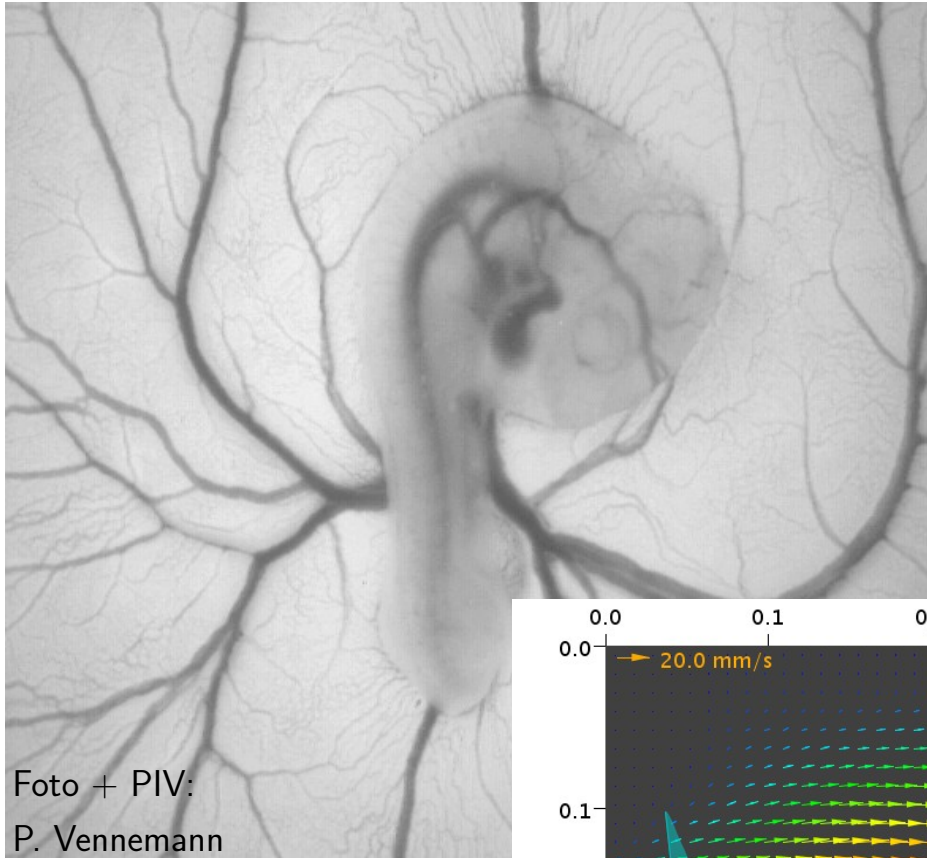
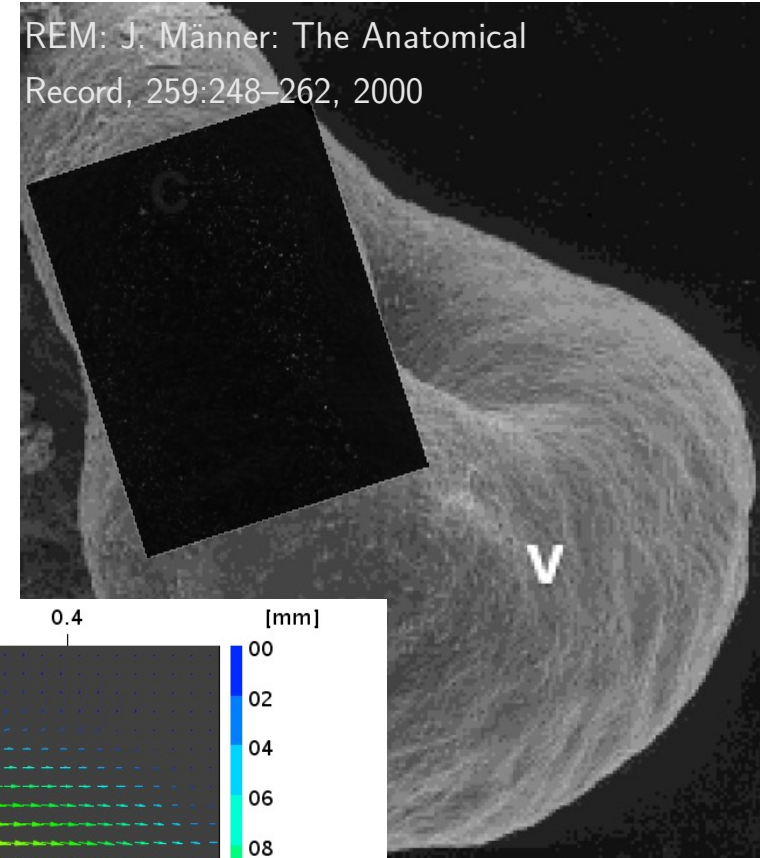
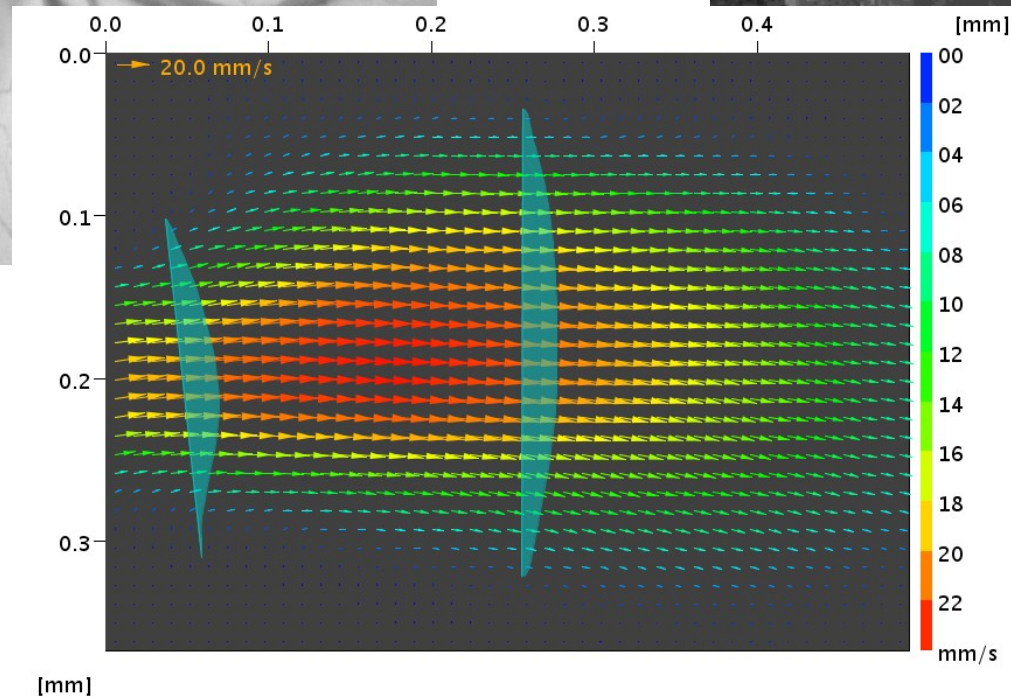


Foto + PIV:
P. Vennemann



REM: J. Männer: The Anatomical
Record, 259:248–262, 2000

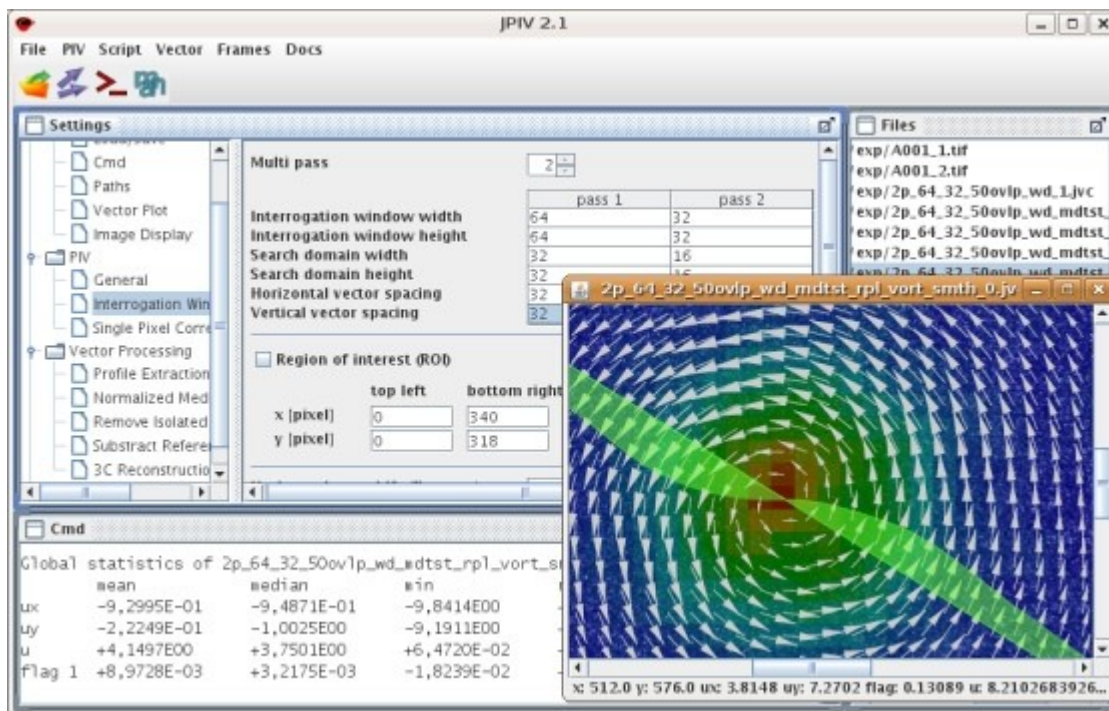




Selbst ausprobieren?

→ Open Source PIV-Auswertesoftware JPIV:

<http://www.jpiv.vennemann-online.de>





Ihre Fragen!