

# HiWi/Bachelor/Masters

## MATLAB / LABVIEW

### “Spray Characterization of Hollow Cone Nozzle”



TECHNISCHE  
UNIVERSITÄT  
DARMSTADT

Fachgebiet Strömungslehre und  
Aerodynamik

**SLA**

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Arbeitsgeber

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**Time:** As early as possible

#### Background:

The Institute of Fluid Mechanics and Aerodynamics has been dealing with years of Interfacial Phenomena. Among them are liquid atomization and the subsequent transport processes understood as sprays. A hollow cone spray nozzle is used to atomize the liquid for the measurement purpose. This work is a part of SPP 1423 project in which Time Shift Technique is being developed for the spray characterization. BSA flow software and LABVIEW programs are correlated with each other for measurement of velocity, drop size, concentration and multiple components inside the high speed spray drops

#### Task/Assignment:-

(A)

- 1) Student will be involved in the supportive task of the actual measurement of spray with the help of High Speed Camera. The images of spray drops obtained will be processed in MATLAB software for plotting the drop size distribution curves.

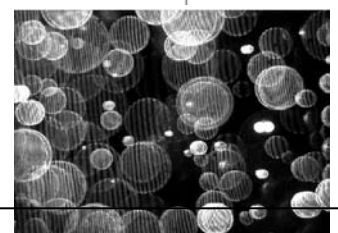
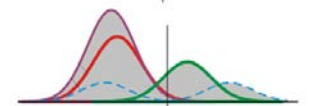
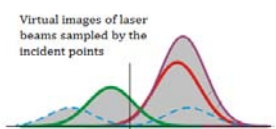
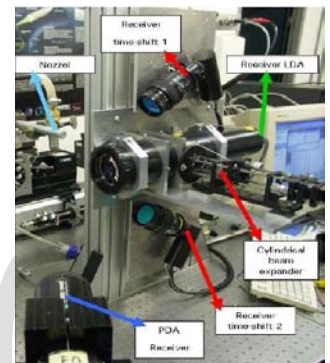
(B)

- 2) Student is supposed to carry out the signal processing of signal received from optical detector on oscilloscope. Fig. 2 a, & b to the MATLAB software by Test and Measurement/ signal processing utility of the software.

The signal pattern obtained by highly sensitive detectors for the time shift of Laser light will be analyzed and processed by student. The student is not supposed to conduct the laser measurement task. These two signals will be correlated using special program for the determination of velocity and the drop diameter.

(OR)

- 3) Task 2 in (B) can also be done by LABVIEW software. In this case student has to work on LABVIEW programming.



**Required Adequacy:** MATLAB programming and/or LABVIEW programming for high speed digitizers and motion controllers



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Further Information: <http://www.sla.tu-darmstadt.de/mitarbeiter/mitarbeiter.p.ger.php?select=119>