

Master Thesis Work

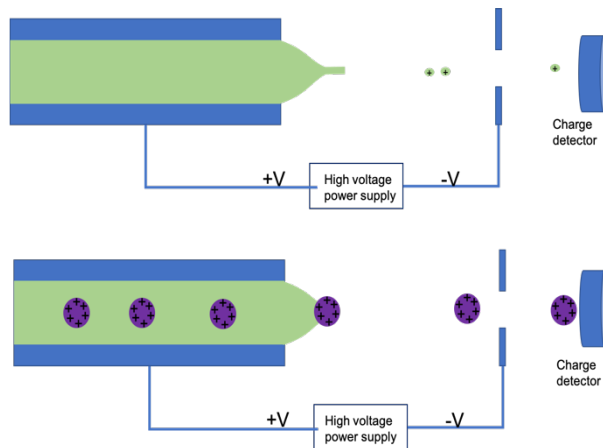
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German thesis title

Development of electrosprayed dust source for the acceleration of micron-sized droplet/dust

Motivation:

Electrostatic dust accelerators operated at University of Stuttgart are powerful tools, which can fire micron-sized particle with speeds from several m/s to 100 km/s. The dust source is one of the key components in a dust accelerator facility. Dust particles obtain their surface charges and preliminary speeds from the dust source. Electro spray uses electrostatic force to conquer the surface tension of liquids, which can generate highly charged droplets when liquids stream through a capillary. The size and charge of the generated droplets depend on the parameters of the liquid (such as, flow rate, surface tension, viscosity, etc) and the electric field.



The ultimate goal of this study is the development of an electro spray-assisted dust source. Main tasks include the mechanical design of experimental setup, the monitor of droplets and property analysis, such as charge, speed, size of individual droplet/dust, etc.

Task description of the Master thesis work:

- Literature review
- Mechanical design of the setup
- Development of an electro spray-assisted dust source
- Implementation: Test and Verification
- Documentation

Supervisor: Yanwei Li
Starting date: 01.01.2024
Submission until: [Click for date](#)

Acknowledgement of receipt:
 I hereby confirm that I read and understood the task of the master thesis, the juridical regulations as well as the study- and exam regulations.

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 Date
 app. Prof. Dr.-Ing. Ralf Srama
 (Responsible Professor)

 Date
 Signature of the student

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