



E I N L A D U N G

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V E R A - S E M I N A R

von

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**Optical levitation - Studies of collision between droplets and a single drop Millikan's experiment**

Optical levitation was first demonstrated by Arthur Ashkin in 1971 when he trapped transparent particles in air using a single vertically aligned, focused laser beam. I will in this seminar present an optical levitation system that is used to study collisions between colliding droplets. Our goal is to study under what conditions two colliding water droplets coalesce. The results of the experiments are of importance for our understanding of the growth of rain droplets in the atmosphere. The collisions are observed using high speed cameras (up to 640 000 frames/sec) when droplets are released from two traps, sediment and then collide.

Second, a single drop Millikan's experiment will be presented. The charge of a trapped droplet can be determined by measuring its oscillatory motion when an AC electric field is applied. The number of excess electrons on the droplet is thereafter changed by illuminating it with UV light. We have currently reached a resolution of  $\pm 3$  elementary charges. Different means to improve this in order to observe the quantization of the charge will be discussed.

In addition, it will be demonstrated how isotropic particles can be made to rotate and spin by trapping them using optical vortices and how fluorescence can be used to detect collisions between droplets.

**Donnerstag, 09.11.2017, 16:30 Uhr**

**1090 Wien, Währinger Str. 17, "Kavalierstrakt",  
1. Stock, Victor-Franz-Hess-Hörsaal**