Antrittsvorlesung
Fakultätskolloquium

Tuesday, 10 December 2019, 17.00

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**Fluctuations and dissipation in phase separation**

My fascination for phase separation was triggered by the observation that precipitation arises in episodic “showers” when it is driven by a small growth of the net droplet volume. In Göttingen we described the time lag between the showers based on carefully designed laboratory experiments (see figure), that mimic also the initiation of rain in the Earth atmosphere. Size focusing observed at early times of the droplet growth shed light on recipes for the synthesis of monodisperse nanoparticles. Present work addresses the size distribution of droplets condensing on different substrates. Moreover, we adapt stochastic models for the evolution of phase boundaries to study the far-from-equilibrium phase separation of signaling domains in biochemical cell membrane polarization, a key process in morphogenesis. In these projects my work on phase separation blends with efforts in the mathematical foundations of fluctuation relations and dissipation in far-from-equilibrium transport processes.