

SEMINAR: Study of out-of-plane rotations in soft matter systems using optical tweezers

BASUDEV ROY

June 05, 2024

12:00 to 13:00

Seminar Room

A rigid body can have 6 degrees of freedom, namely the three translational degrees of freedom and the three rotational degrees of freedom. Of these, the translational degrees have been well explored in optical tweezers community. However, only the in-plane rotational degree of freedom has been explored. We call this in-plane degree of rotational freedom, the yaw motion in the nomenclature of the airlines. The pitch and roll degrees are only beginning to be explored recently.

In this talk, I will show you 4 ways of generating pitch rotation using the optical tweezers. I will also show you one way of detection of pitch rotation at high resolution using birefringent particles. I will also show a few ways of generating controlled roll motion. Further, I will discuss some applications of this pitch rotation in cell biology and soft matter systems like the study of the properties of the cell membrane and rheology of the cell interior.

Hosted by: Prof. Dr. Michael Krieg