Universität Bern
Institut für Angewandte Physik
Sidlerstrasse 5
CH-3012 Bern

Telefon: +41 31 684 89 11
E-Mail: iapemail@iap.unibe.ch
www.iap.unibe.ch

UNIVERSITÄT BERN

Seminar über Biomedizinische Photonik

Referent/in: Kai Long, Department of Biomedical Engineering, National University of Singapore

Titel: Ciliary motility assessment by light-sheet laser speckle imaging

Nasal cilia are the first line of defines against infection in the upper respiratory tract. Optical imaging methods have been used to acquire several indicators for assessing ciliary motility. Labelling-based methods, such as microbead labelling and ink labelling, have been able to accurately analyse ciliary beat frequency (CBF) and ciliary beat pattern (CBP). However, a label-free technique is always desirable if it could provide similar information or even more. Laser speckle imaging is a wide-field, non-invasive, label-free imaging technique with high temporal and spatial resolution. Here, we report a light-sheet laser speckle imaging (LSH-LSI) platform for assessing the cilia motility taking the advantage of its inherent optical sectioning capability. The experimental results demonstrated that LSH-LSI can measure the CBF reliably and distinguish the asymmetry of the power stroke and recovery stroke. More quantitative indicators, such as stroke period, and power-recovery peak ratio, are extracted from the velocity waveform to estimate the CBP. Further PIV analysis of the speckle image can also determine the motility direction at different strokes.

Zeit: Mittwoch, 19. April 2023, 09:15 Uhr

Ort: **Online-Seminar, A4,** Gebäude Exakte Wissenschaften, Sidlerstrasse 5, Bern, Schweiz
https://ethz.zoom.us/j/67391647405
Meeting-ID: 673 9164 7405