TECHNISCHE UNIVERSITÄT WIEN
Vienna University of Technology

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IAP-SEMINAR

EINLADUNG

Termin: **Dienstag, 25.10.2011 um 16:00 Uhr**

Ort: **Technische Universität Wien,**
Institut für Angewandte Physik,
Seminarraum 134A, Turm B (gelbe Leitfarbe), 5. OG
1040 Wien, Wiedner Hauptstraße 8-10

Vortragender: **Ao.Univ.Prof. Dr. Rainer A. Leitgeb**
Center for Medical Physics and Biomedical Engineering,
Medical University Vienna

Thema: **In-vivo structural and functional optical coherence microscopy**

Kurzfassung

Optical Coherence Tomography (OCT) has found entrance into many different fields of medicine and shows also interesting applications in the field of biology. Especially Fourier domain (FD) OCT offers distinct advantages with respect to imaging speed and sensitivity. Recent advances in light source and detector technology propelled imaging speeds of FDOCT from several 100.000 to even several Mhz depth profile rate. This acquisition speed allows already recording several tissue volumes per second! Motion artifacts that usually affect in-vivo applications are strongly reduced which increases image quality revealing comprehensive micro-structural details, and paves the way for in-vivo optical coherence microscopy (OCM). High speed FDOCM gave for example for the first time access to photoreceptor structure without employing adaptive optics. The structural fidelity proves important as well for imaging micro-capillary structure of the central retina. The capillary structure is highly susceptible to pathologic changes of microcirculation that might be the cause of e.g. diabetes. Recent developments of non-invasive optical angiography demonstrate impressive examples of contrasting tumor perfusion or retinal perfusion. In particular, employing Bessel beams with their regenerative property and large depth of focus offer substantial advantages or imaging small details such as micro-capillaries within strongly scattering tissue. There is substantial hope that the number of invasive contrast agent based angiography techniques could be reduced. Again high speed imaging decreases measurement time resulting in increased patient comfort as well as reduces motion artifacts resulting in higher functional and structural fidelity.

Alle interessierten Kolleginnen und Kollegen sind zu diesem Seminar
(45 min mit anschließender gemeinsamer Diskussion) herzlich eingeladen.

M. Gröschl e.h.
(Seminar-Chairperson)

H. Störi e.h.
(LVA-Leiter)