



TECHNISCHE
UNIVERSITÄT
WIEN

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INSTITUT FÜR
ANGEWANDTE PHYSIK
Institute of Applied Physics
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IAP-SEMINAR

EINLADUNG

Termin: **Dienstag, 7.6.2011 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: **Mathieu Jean, M.Sc.**
TU Wien und Seibersdorf Laboratories GmbH

Thema: **Computer modeling of laser-induced lesions to the eye:
threshold thermal injuries in laboratory animals**

Kurzfassung

Ocular tissues are by far the most vulnerable to optical radiation. Among various possible damage mechanisms, pure thermal damage occurs for exposures longer than approximately several μs , where the cornea and the retina are the primary targets depending on the wavelength and the spatial extent of the source. Macaque monkey and rabbit are the most suitable experimental models for the retina and the cornea, respectively. Safety guidelines and subsequent norms are up to now almost entirely supported by these expensive, time-consuming and ethically disputable experiments. A physics-based model should provide a reliable alternative. The current computerized approach basically consists of an optical model (for absorption, refraction and reflection), a thermal model solved by means of finite elements (taking conduction and convection into account) and a damage model using the Arrhenius equation for reaction kinetics. Despite experimental uncertainty and modeling inaccuracy, experimental results are reproducible within a satisfactory factor of 2.

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

*W. Husinsky e.h.
(Seminar-Chairperson)*

*H. Störi e.h.
(LVA-Leiter)*