

Optopub

Välkommen på två korta **kvällseminarier** under en knapp timmes tid
torsdagen den 18 december 2008 **17.30– 18.30 i Electrum 1**

(Konferensrummet på avdelningen för
Fotonik med mikrovågsteknik, plan C3, Isafjordsg. 22 eller Kistagången 14)

Se karta på <http://www.it.kth.se/upl/filer/644.pdf>!

Miroslav Kobetski, Tobii Technology AB (17.30)

Extending the depth of field of eye-tracking systems using Wavefront Coding

Eye tracking is rapidly finding new applications due to recent breakthroughs in digital imaging. Currently *eye-tracking* is used extensively for market research and computer interface analysis. The same technology is also used for *eye-control* of computers, enabling disabled persons to communicate using eyes only. Eye tracking dates back more than 100 years having magnetic coils and electrodes as transducers used in psychological research. Today, all non-invasive systems rely on video based techniques.

In order for video-based eye-tracking to be successful, sharp images with extended focus depth are required. To increase the region of adequate focus, a technique called Wavefront Coding (WFC) has been examined. The principle of WFC is to “encode” the optical field using an optical element that produces focus invariance, and then “decode” it digitally, which results in a sharp image. This talk will briefly discuss video-based eye-tracking, and then focus on the theory and practice of Wavefront Coding.

Zhangwei Yu, Fotonikavdelningen KTH (18.00)

Fibre Bragg Grating Components for High Speed Wavelength Switching

Research on gratings written in side-hole fibres with internal electrodes has been carried out. The temperature dependence measurements showed that the birefringence of the component increased with the temperature. Dynamic measurement has shown nanosecond full off-on and on-off switching. During the electrical pulse action, the grating wavelength was blue-shifted for the x-polarization and red-shifted for the y-polarization due to the mechanical stress. Both peaks subsequently experienced a red-shift due to the relaxation of mechanical stress and the increasing core temperature transferred from the metal in many microseconds. All the wavelength shifts of the two polarizations depend quadratically on the electrical pulse voltage and linearly on the pulse duration. Numerical simulations gave accurate description of the experimental results and were useful to understand the physics behind the birefringence switching.

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OPTIKPUB

för alla som vill diskutera optik eller annat **18.30 –20.00.**

Julmat i FMIs cafereria invid konferensrummet i Electrum:

Öl med tillbehör garanteras också!

Vi tackar Linnécentrat för avancerad optik och fotonik för sponsringen av optopuben så att ingen avgift utgår denna gång

Ulf Ekenberg och Pierre-Yves Fonjallaz

Föranmälan till optopub@kprc.se för mat senast onsdagen den 10:e december tack!