



DOTTORATO DI RICERCA
UNIVERSITÀ DI PISA

DIPARTIMENTO DI FISICA "ENRICO FERMI"

Scuola di Dottorato in Scienze di base "Galileo Galilei"
Dottorato in Fisica

AVVISO DI SEMINARIO

Venerdi 18 Novembre 2011
ore 11:00

Dipartimento di Fisica
Sala 248 - I piano - Ed. C

Dr. Christian Kränkel

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"Growth and laser applications of rare-earth doped sesquioxides"

Abstract : The cubic sesquioxides (RE₂O₃ with RE = Lu, Y and Sc) provide excellent thermal and mechanical properties, which make them very suitable as host materials for different rare-earth ions. However, their very high melting points around 2400°C make great demands on the growth of high quality crystals with a sufficient size for laser applications. Recent improvements in the growth of rare-earth doped sesquioxides by the heat exchanger method enabled several exciting new developments in the field of diode pumped high power solid-state lasers. Moreover, the different radii of the incorporated cations varying between 0.9 Å (Y³⁺) and 0.75 Å (Sc³⁺) lead to very different lattice environments, allowing for a customized tailoring of the gain spectra by the growth of mixed sesquioxides. This so called "crystal field tuning" enables to address particular wavelengths by shifting the peak emission or to broaden gain spectra supporting ultrashort pulses. I will report on our latest research on Er-, Tm-, Nd-, and in particular Yb-doped lasers in cw- and modelocked operation.

M.Tonelli