DOTTORATO DI RICERCA
UNIVERSITÀ DI PISA

DIPARTIMENTO DI FISICA "ENRICO FERMI"

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

AVVISO DI SEMINARIO

Giovedi 14 Aprile 2011
ore 10:00

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

Dr. Martin Schellhorn

French-German Research Institute - Saint Louis - France

"Diode-end-pumped solid-state lasers and amplifiers at 2 µm"

Abstract : An introduction to 2-µm Tm and Ho lasers will be given and some simulation tools developed at ISL will be presented: the modelling of laser output power as a function of pump power, the modelling of Q switch operation and the modelling of an amplifier stage.
A Q-switched Tm:fiber-laser-pumped Holmium doped fluoride lasers will be reported that has been optimized for high-energy pulses at low repetition rates. A compact Ho:YLF oscillator–amplifier system in a novel setup was developed to utilise the unpolarised pump power from a fibre laser efficiently, and produced 21.3 mJ at 1 kHz, with an $M2$ better than 1.1.
Ho doped crystals of YLiF4 (YLF) and LuLiF4 (LLF) are studied under identical pump conditions in continuous-wave (CW) and Q-switched operation. Longitudinal end-pumped CW laser performance shows Ho:LLF to have a slightly lower threshold and a slightly higher slope efficiency with respect to absorbed pump power than Ho:YLF. From the amplifier, 78 mJ were produced at a repetition rate of 100 Hz.
A Tm:YLF slab laser was developed and 225 W of continuos-wave output was obtained at 1912 nm, which can be used for further amplification of the Ho pulses in a slab amplifier geometry.

M.Tonelli