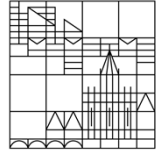


Physikalisches Kolloquium

Universität
Konstanz



Di 04.07.17
15:15 Uhr
14:45 Uhr, Kaffee/Tee
R 513



Prof. Dr. Eberhard Riedle
LMU München

Possibilities and challenges in the development of NOPAs with ever better specifications

For many years optical parametric amplifiers were claimed to be loss-less, scalable and highly efficient. With the continuous increase of repetition rate and average power of the pump lasers and the switch to Yb based systems with longer pulses we clearly see limits to this believe. Multi-photon absorption in the nonlinear crystals leads to severe heating that can cause detuning from the phase matching condition and eventually scatter of the crystal. The Kerr effect leads to dynamic lenses and breakup of the beam that limits the meaningful conversion efficiency well below reported values. The pump induced Kerr lens also leads to unexpected steering of the amplified light. Last but not least the pulse contrast is limited by the density of vacuum modes responsible for the parametric superfluorescence. For spectroscopic applications we can circumvent all these challenges by proper system layout and operation. As a result MHz pulses in the 10 fs regime with direct tunability over the whole visible range become available. The transfer into the UV by simple SHG needs careful design to yield the shortest pulses.

