

The University of New Mexico Student Chapter of the Optical Society of America presents

CLEO 2007 Practice Talks

Tuesday, May 1st, 11:00am, CHTM Room 101

A light lunch will be provided.

Andreas Schmitt-Sody:

Mode Locked Bidirectional Ring Laser as a Two-level System

The population transfer between the two pulses in a mode locked ring laser can be the direct analogy of the population oscillation (Rabi cycle) in a two-level atom.

Andreas Velten:

Intracavity Pumped Picosecond Optical Parametric Oscillator for Intracavity Interferometry

A picosecond pulse circulating inside a mode-locked vanadate laser pumps twice/round-trip a LiNbO₃ crystal, creating two non-interacting signal pulses circulating in a resonant cavity. This configuration is ideal for intracavity interferometry applications.

Zahyun Ku:

Experimental Comparison of Circular, Elliptical and Rectangular (Fishnet) Negative-Index Metamaterials

We fabricate and characterize the negative-index metamaterials (NIMs) at near infrared wavelength ($\sim 2 \mu\text{m}$) to compare the geometrical dependence and demonstrate the optical properties of NIMs with circular, elliptical and rectangular holes penetrating through metal/dielectric/metal films. Our experiments reveal NIMs with elliptical and rectangular holes show similar figure of merit, however, transmission is better for NIM with rectangular holes.

Liang Xue:

CW, High Power, Single-Longitudinal-Mode MID-IR DFB Laser with Large Tunability Based on Chirped-Grating Design

We have demonstrated CW, single-longitudinal-mode, distributed-feedback (DFB) operation on an antimonide-based type-II quantum-well laser in the mid-IR wavelength range (3-5 μm). Record high output power of 300 mW per side was obtained at 77 K. Recently, tunability of 21 nm (14 cm^{-1} or 420 GHz) was also achieved based on chirped-grating DFB design on the same laser.

Nathan Withers:

Y-Junction-Coupled S-Section InAs/InGaAs/GaAs Quantum-Dot Ring Lasers with High Unidirectionality

We report on fabrication and characterization of Y-junction-coupled S-section InAs/InGaAs/GaAs quantum dot ring lasers with high unidirectionality. The new design suppresses the unwanted counterpropagating modes more effectively than in the previous S-section-racetrack design.

Yan Li:

Two-section Quantum Dot Lasers with 20-dB Modulation Efficiency Improvement

A 20-dB enhancement in the amplitude modulation efficiency and a gain lever of 30 is observed in a two-section quantum dot laser. A novel modulation response equation is derived to explain the device behavior.

Yongchun Xin:

Characterization of the Static and Dynamic Parameters in a 1.3- μm Quantum Dot Mode-locked Laser

The static and dynamic parameters governing pulse width in the Haus Master-Equation are measured using LI curves, pulsed performance and the segmented-contact method. The relationship between QD-MLL performance and QD parameters is studied.

Monolithic 1.55- μm GaInNAsSb Quantum Well Mode-Locked Lasers

The first monolithic GaInNAsSb/GaNAs 1550-nm mode-locked lasers are reported on a GaAs substrate. A repetition rate of 5.8 GHz has been realized.