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CB-P.44 MON

Symmetry Properties and Coexistence of the Mode-Locked States in Semiconductor Lasers

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We, experimentally and numerically, explore the symmetry properties of mode-locked semiconductor lasers and demonstrate coexistence, multistability and switching of translationally symmetrical mode-locked regimes which possess different repetition rates and temporal pulse profiles.

CB-P.45 MON

Superradiance as a Way to the Steady-State Multimode and Ultrashort Pulsed Lasing in CW Quantum-Dot Heterolasers

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We design the pulsed quantum-dot heterolaser based on the superradiance under CW pumping and show that a few superradiant modes will emit the sequences of ultrashort pulses and support many steady-state modes which are self-locked.

CB-P.46 MON

Self-sustained pulse oscillations in a quantum dot laser monolithically grown on germanium

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We show that a free-running InAs/GaAs quantum dot laser monolithically grown on germanium exhibits self-sustained pulse oscillations with one, two, and three periods at different pump currents, without incorporating any saturable absorber.

CB-P.47 MON

Repetition rate locking of mutually injected monolithic passively mode-locked semiconductor quantum dot lasers

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Repetition rate and emission wavelength locking of two mutually injected monolithic two-section passively mode-locked InAs/InGaAs-quantum-dot semiconductor lasers emitting at 1250 nm is experimentally demonstrated and theoretically explained for varying delay length and biasing conditions.

CB-P.48 MON

Analysis of optical frequency comb generation in gain-switched semiconductor lasers

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We have analysed experimentally and by simulations the generation of OFCs from gain-switched semiconductor lasers. The results provide an excellent guide to select the best driving conditions for specific comb characteristics

CB-P.49 MON

Quasi-Linear Displacement Measurement with Laser Feedback Interferometry

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We demonstrate experimentally a displacement sensor, making use of the traditional, unmodified, laser feedback interferometry setup, that leads, in the absence of any post-processing, to a minimal detectible displacement as small as 12 nm.

CB-P.50 MON

Pulse compression using chirp of transistor lasers regardless of types of fiber dispersions

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We demonstrate the small-signal chirping of transistor lasers and the reshape of the optical Gaussian pulse in fibers. It shows that the pre-chirped pulse of TLs can be compressed in both normal and abnormal dispersion.

CB-P.51 MON

Tailoring localization features in passively mode-locked lasers with V-shaped cavity geometry

•*J. Hausen, S. Meinecke, and K. Lüdge*; *Institute of Theoretical Physics, TU Berlin, Berlin, Germany*

We examine the influence of the distinct cavity features of a passively mode-locked laser with V-shaped external cavity geometry on localized structures, forming from a multi-stability of the off-solution and the periodic mode-locking solutions.

CB-P.52 MON

Optical Frequency Comb Generation Using Quantum Cascade Lasers Subject to Optical Injection

B.-B. Zhao and •*C. Wang*; *ShanghaiTech University, Shanghai, China*

We propose to produce optical frequency combs using period-one dynamics of quantum cascade lasers subject to optical injection. The comb frequency is continuously tunable via fine control of injection ratio and/or detuning frequency.

CB-P.53 MON

The contribution has been withdrawn.

CB-P.54 MON

Relative Intensity Noise of 3.4 μm Interband Cascade Laser

Y. Deng, Y.-T. Gu, B.-B. Zhao, and •*C. Wang*; *ShanghaiTech University, Shanghai, China*

We experimentally show that the relative intensity noise of a continuous-wave InAs/GaSb interband cascade laser operated at room temperature reaches as low as -130 dB/Hz.

CB-P.55 MON

Modelling the spatio-temporal dynamics of quantum cascade laser frequency combs

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A theoretical model which describes the intra-cavity dynamics of the QCL phase-locking process through the inclusion of optical non-linearities and group velocity dispersion is presented. The model is found to agree with recent experimental results.

CB-P.56 MON

High frequency modulation characteristics of mid-infrared ring quantum cascade lasers

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We show the high frequency modulation and single sideband characteristics of mid-infrared emitting ring-DFB QCLs up to 800 MHz, designed for spectroscopic and data transfer applications. They are investigated and compared to identical Fabry-Pérot devices.

CB-P.57 MON

Above-Threshold Modeling of Resonant Leaky-Wave Coupled Phase-Locked Array of Quantum Cascade Lasers

N.N. Elkin[1], *A.P. Napartovich*[1], •*D.V. Vysotsky*[1], *C. Sigler*[2], *C. Boyle*[2], *J.D. Kirch*[2], *T. Earles*[3], *D. Botez*[2], *L.J. Mawst*[2], *and A. Belyanin*[4]; [1]*SRC RF TRINITI, Troitsk, Russia*; [2]*University of Wisconsin-Madison, Madison, USA*; [3]*Intraband, LLC, Madison, USA*; [4]*Texas A&M University, College Station, USA*

Phase locked quantum cascade laser array emitting at 4.7μm is an efficient source of high quality radiation. We show how theoretical model reveals the factors limiting the power of its single mode CW operation.

CB-P.58 MON

Rate Equation Modeling of Interband Cascade Lasers

Y. Deng and •*C. Wang*; *ShanghaiTech University, Shanghai, China*

We propose a rate equation model for interband cascade lasers, and theoretically demonstrate that a small gain stage number reduces the modulation bandwidth, the relative intensity noise, and the phase noise.