

Room C (103)

Session Title 27C2 / [T02] Characterization of Ultrashort Laser Pulses
Date & Time Thursday, 27 August, 15:45 ~ 17:30
Session Chair Ya Cheng (Shanghai Institute of Optics and Fine Mechanics, China)

[27C2-1] 15:45~16:15 Invited Talk

Measurement and Control of Optical Waveforms

Kyung Taec Kim^{1,2}, Kyungseung Kim^{1,3}, and Chang Hee Nam^{1,2,3}

¹Institute for Basic Science, Korea, ²GIST, Korea, ³KAIST, Korea

An arbitrary optical waveform can be measured by adding a weak additional signal field in high harmonic experiments. The wavelength dependence of the signal field is investigated using the quantum path analysis.

[27C2-2] 16:15~16:30

Gain Dynamics and Temporal Characteristics of Nitrogen Lasers Pumped by Circularly-polarized Femtosecond Laser Pulses

Jinping Yao¹, Bin Zeng¹, Wei Chu¹, Hongqiang Xie¹, Ziting Li¹, Jielei Ni¹, Guihua Li¹, Chenrui Jing¹, Huailiang Xu¹, and Ya Cheng¹

¹Shanghai Institute of Optics and Fine Mechanics, China, ²Jilin University, China

We experimentally investigate gain dynamics and temporal characteristics of a free-space nitrogen laser pumped by circularly-polarized femtosecond laser pulses based on the pump-probe scheme.

[27C2-3] 16:30~16:45

All-optical Single-shot Ultrafast 2D-burst Imaging Using a Linearly Frequency Chirped Pulse

Takakazu Suzuki, Fumihito Isa, Leo Fujii, Kenichi Hirose, and Fumihiko Kannari

Keio University, Japan

We demonstrate a new scheme of spatially and temporally resolved all-optical wavelength-multiplexed imaging (STRAW) in the 4f configuration with a DOE and a band-pass filter. Using a frequency chirped pulse, we realize single-shot ultrafast imaging.

[27C2-4] 16:45~17:15 Invited Talk

Measurement and Synthesis of Ultrafast Scalar and Vectorial Optical Arbitrary Waveforms

Shang-Da Yang

National Tsing Hua University, Taiwan

The latest methods to simultaneously characterize and synthesize ultrafast optical arbitrary waveform in the scalar and vectorial regimes are reviewed.

[27C2-5] 17:15~17:30

Ultrafast Pre-damage Dynamics in Al₂O₃/SiO₂ Reflector

Juan Du¹, Zehan Li¹, Bing Xue², Takayoshi Kobayashi², Yuanan Zhao¹, and Yuxin Leng¹

¹Chinese Academy of Sciences, China, ²University of Electro-Communications, Japan

Ultrafast reflectivity decrease due to free electron absorption and spectral shift due to generation of defect state in Al₂O₃/SiO₂ UV reflector have been observed for the first time to the best of our knowledge.

Room D (106)

Session Title 27D2 / [T10] Quantum Phenomena in Micro/Nano Optics
Date & Time Thursday, 27 August, 15:45 ~ 17:00
Session Chair Zee Hwan Kim (Seoul National University, Korea)

[27D2-1] 15:45~16:00

Radiation Coupling Between Two Deformed Microcavities

Fang-Jie Shu¹, Chang-Ling Zou², F.-W. Sun², and Wen-Cong Chen¹

¹Shangqiu Normal University, China, ²University of Science and Technology of China, China

Strong and steady coupling between optical elements is important in integrated optical circuit. Through deforming the boundary of microcavities we construct a coupling system composed with two cavities. Then the characteristics of the system are studied.

[27D2-2] 16:00~16:15

Influence of the Relative Positions of Quantum Dots and Nanocavities on the Optical Coupling Strength

Kazuhiro Kuruma, Yasutomo Ota, Daisaku Takamiya, Masahiro Kakuda, Satoshi Iwamoto, and Yasuhiko Arakawa

The University of Tokyo, Japan

We use scanning electron microscopy to precisely measure the locations of quantum dots buried in photonic crystal nanocavities. We show that well-positioned dots (at the field maximum) can exhibit vacuum Rabi splittings larger than 180μeV.

[27D2-3] 16:15~16:30

Enhanced Second-harmonic Generation Efficiency in a Waveguide-coupled Photonic Nanocavity

Heungjoon Kim, Chan Lee, and Bong-Shik Song

Sungkyunkwan University, Korea

We investigate second-harmonic generation (SHG) efficiency in a waveguide-coupled photonic nanocavity. The factors for highly-efficient SHG are analyzed. It is found that 100% efficiency is achievable by introducing a mirror at the waveguide.

[27D2-4] 16:30~16:45

Ultra-Widely Tunable Nanofiber Bragg Cavities for Quantum Optics

Andreas W. Schell^{2,3,4}, Hideaki Takashima^{1,3,4}, Shinya Kamioka^{2,4}, Yasuko Oe^{1,3,4}, Shinjiro Fujita¹, Masazumi Fujiwara^{2,3,4}, Oliver Benson², and Shigeki Takeuchi^{1,3,4}

¹Kyoto University, Japan, ²Humboldt-Universität zu Berlin, Germany, ³Hokkaido University, Japan, ⁴Osaka University, Japan

For efficient interfacing of quantum emitters nano- and microcavities are important tools. Here, we introduce Bragg cavities fabricated on nanofibers. We show strain-tuning of the cavity resonance and first coupling experiments with quantum emitters.

[27D2-5] 16:45~17:00

Frequency Comb Generation in Green, Red and Infrared Region from AlN Microring Resonator

Hojoong Jung, Rebecca Stoll, Xiang Guo, Debra Fischer, and Hongxing Tang

Yale University, USA

We demonstrate optical frequency comb generation in visible and IR spectrum within a high Q aluminum nitride microring resonator. High resolution spectroscopic study of the comb indicates matched free spectral range over all the bands.