

Room G (201)

Session Title 25G3 / [T08] Atom-Photon Interaction I
Date & Time Tuesday, 25 August, 15:45 ~ 17:45
Session Chair Jong Chan Lee (POSTECH, Korea)

[25G3-1] 15:45~16:15 Invited Talk

Slow, Stored, and Stationary Light for the Applications in Low-Light-Level Nonlinear Optics and Quantum Memory

Ite A. Yu

National Tsing Hua University, Taiwan

Our recent studies on low-light-level nonlinear optics and quantum memory based on slow, stored, and stationary light, and recent demonstration of two-component or spinor slow light will be presented in this talk.

[25G3-2] 16:15~16:45 Invited Talk

Superfluid Optomechanics

David McAuslan, Glen Harris, Chris Baker, Yauhen Sachkou, and Warwick Bowen
University of Queensland, Australia

Cavity optomechanics allows the first direct observation of superfluid thermodynamical motion. Laser cooling and strong quartic nonlinearities are both observed, enabling prospective applications in quantum engineering, precision sensing, and studies of emergent quantum phenomena.

[25G3-3] 16:45~17:00

Manipulation of Frequency-Time Quantum Correlation of Narrow-Band Photon Pairs

Young-Wook Cho, Kwang-Kyoon Park, Jong-Chan Lee, and Yoon-Ho Kim
POSTECH, Korea

A specific form of frequency-time quantum correlations is naturally inherent in the nonclassical photon pairs generated via a parametric process. Here, complete manipulation of frequency-time quantum correlations of narrowband biphotons is reported.

[25G3-4] 17:00~17:15

Experimental Generation of Multiple Quantum Correlated Beams from Four-wave Mixing

Jietai Jing

East China Normal University, China

We report on our recent experimental results of generating quadruple quantum correlated beams by using cascaded four-wave mixing processes in hot rubidium vapor. The intensity-difference squeezing of the four beams is about 8.0 dB.

[25G3-5] 17:15~17:30

Characterization of Electromagnetically Induced Transparency in Rydberg State of ^{87}Rb

Hyo Min Kwak¹, Taek Jeong¹, Yoon-Seok Lee², No-Weon Kang², Seung Kwan Kim², and Han Seb Moon¹

¹Pusan National University, Korea, ²KRIS, Korea

We present the direct measurement of highly excited Rydberg state using a ladder-type electromagnetically induced transparency in the $5S_{1/2}$ - $5P_{3/2}$ -nL transition of ^{87}Rb atoms in a room-temperature vapor cell.

[25G3-6] 17:30~17:45

Coherence Time Limit of Entangled Paired Photons Generated in a Cold Atom Cloud

Jiefei Chen, Zhiguang Han, Peng Qian, Lu Zhou, and Weiping Zhang

East China Normal University, China

Through electromagnetically-induced transparency (EIT) assisted spontaneous four-wave mixing, we produce the entangled paired photons with a coherence time of 2.34 μs from a cold atom cloud. The EIT dephasing rate is the ultimate limit.

Room H (202)

Session Title 25H3 / [T11] Multiphoton Microscopy
Date & Time Tuesday, 25 August, 15:45 ~ 17:30
Session Chairs Wonshik Choi (Korea University, Korea)
Beop-min Kim (Korea University, Korea)

[25H3-1] 15:45~16:15 Invited Talk

Visible-wavelength Two-photon Excitation Microscopy

Katsumasa Fujita

Osaka University, Japan

We demonstrated two-photon excitation of fluorescent proteins by using visible light. The excitation scheme has been applied to simultaneous multicolor imaging of biological cells with improved spatial resolution.

[25H3-2] 16:15~16:30

Side-view Confocal Endomicroscopy for in Vivo Longitudinal Cellular Imaging of Small Intestine

Jinhyo Ahn¹, Kibaek Choe¹, Taejun Wang², Yoonha Hwang¹, Ki Hean Kim², and Pilhan Kim¹
¹KAIST, Korea, ²POSTECH, Korea

In vivo longitudinal repetitive cellular level observation of microvasculature and fluorescent cells in a small intestinal tract of single mouse in minimally invasive manner was demonstrated by using GRIN lens based sideview confocal endomicroscopy.

[25H3-3] 16:30~16:45

High-speed, Thermal Damage-free Ablation of Brain Tissue with Femtosecond Pulse Bursts

Can Kerse¹, Seydi Yavas², Hamit Kalaycioglu¹, Mehmet D. Asik², Önder Akcaalan¹, and F. Ömer Ilday¹
¹Bilkent University, Turkey, ²FiberLAST, Inc., Turkey, ³Hacettepe University, Turkey

We report a novel ultrafast burst mode fiber laser system and results on ablation of rat brain tissue at rates approaching an order of magnitude improvement over previous reports, with no discernible thermal damage.

[25H3-4] 16:45~17:00

Subtraction Threshold for Fluorescence Difference Microscopy

Nan Wang^{1,2} and Takayoshi Kobayashi^{1,2,3,4}

¹University of Electro-Communications, Japan, ²JST, Japan, ³National Chiao-Tung University, Taiwan, ⁴Osaka University, Japan

The selection criterion of subtraction factors used in subtraction microscopy is numerically investigated. The fluorescence peak intensity after subtraction and resolution derivative are proposed as essential parameters for evaluating the subtraction threshold.

[25H3-5] 17:00~17:15

Ablation of Targeted Cardiomyocyte in Zebrafish Larvae Utilizing Femtosecond Laser

Kazunori Okano, Chung-Han Wang, and Ian Liao

National Chiao Tung University, Taiwan

An intended death of target cardiomyocyte was induced in zebrafish by femtosecond-laser illumination. Time-lapse imaging revealed that cellular morphology changes accompanied by increase of membrane permeability and generation of cytosolic bubbles enclosed with plasma membranes.

[25H3-6] 17:15~17:30

Dark State Dynamics of Fluorescent Proteins Investigated by Fluorescence Transients

Naoto Kamiyama, Yoshiya Sunairi, Keisuke Toda, Hiroshi Takahashi, and Akira Suda
Tokyo University of Science, Japan

Transient fluorescent variations of enhanced green fluorescent protein and enhanced yellow fluorescent protein indicate the existence of two transient dark states including the lowest triplet state and the other dark state with a longer life time.