Room G (201)

Session Title 26G3 / [T08] Atom-Photon Interaction II
Date & Time Wednesday, 26 August, 15:45 ~ 17:15
Session Chair Yong-Il Shin (Seoul National University, Korea)

[26G3-1] 15:45~16:15 Invited Talk

Storing Single Photons in a Quantum Register

Joerg Wrachtrup

Stuttgart University, Germany

The efficient transfer of photons from a light field to a solid state quantum register is key to distributed quantum computing and quantum repeater architectures.

[26G3-2] 16:15~16:30

Experimental Investigation of Transverse Spatial Coherence of an Optical Pulse in Atomic Vapor Quantum Memory

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

POSTECH, Korea

We experimentally investigate the transverse spatial coherence of an optical pulse stored in atomic vapor quantum memory. Using Young-type spatial interference, it is demonstrated that the atomic vapor quantum memory preserves transverse spatial coherence.

[26G3-3] 16:30~16:45

Saturated Absorption Spectroscopy of Helium 2^3S-3^3P Transitions

Chia-Wei Chen[1], Jain-You Chen[1], Pei-Ling Luo[2], Jow-Tsong Shy[2], Li-Bang Wang[2], and Hsiang-Chen Chui[1]

[1]National Cheng Kung University, Taiwan, [2]National Tsing Hua University, Taiwan

We have observed the saturated absorption spectrum of the He-4 2^3S^1-$3^3P_{0,1,2}$ hyperfine transitions in a RFdischarged helium cell using a 6-mW 389-nm laser. The linewidth broadening due to power was investigated.

[26G3-4] 16:45~17:00

The Effects of Two Photon Coherence on the Four-wave Mixing Spectrum in a Ladder-type Atomic system

Yoon-Seok Lee and Han Seb Moon

Pusan National Univiersity, Korea

We report the analysis of four-wave mixing spectrum in terms of two-photon coherence in a ladder-type atomic system of the $5S_{1/2}$ - $5P_{3/2}$ - $5D_{5/2}$ transition of ^{87}Rb atom. This spectroscopy is potentially useful for the effective way to generate a correlated photon pair from an atomic ensemble.

[26G3-5] 17:00~17:15

Resonant Four-wave Mixing with Co-propagating Scheme in Rubidium Vapor Cell

Taek Jeong and Han Seb Moon

Pusan National Univiersity, Korea

We have observed four-wave mixing (FWM) of weak pumping in a resonance double-Λ system for the $5S_{1/2}$ – $5P_{1/2}$ transition of ^{87}Rb atoms. When three beams (CPT1, CPT2 and pump) were co-propagated in the double-Λ configuration composed of the common excited state $5P_{1/2}$ (F_e=2) and the two ground state $5S_{1/2}$ (F_g=1 and 2), we directly measured the generated FWM signal filtering the three beams using polarizer and etalon filters. The spectral width of FWM signal was measured to be ~10 kHz under the condition of coherent population trapping (CPT). Dependence of FWM signals on the intensities of the two beams related CPT and pump beam was investigated in detail.

Room H (202)

Session Title 26H3 / [T11] Tissue Imaging
Date & Time Wednesday, 26 August, 15:45 ~ 17:45
Session Chair Hyuk-Sang Kwon (GIST, Korea)

[26H3-1] 15:45~16:15 Invited Talk

Extraordinary Light Transmission for Super-resolved Axial Imaging

Wonju Lee[1], Jong-Ryul Choi[2], Kyujung Kim[3], Youngjin Oh[1], and Donghyun Kim[1]

[1]Yonsei University, Korea, [2]Daegu-Gyeongbuk Medical Innovation Foundation, Korea, [3]Pusan National University, Korea

In this paper, the feasibility of super-resolved axial imaging is explored by extraordinary light transmission using graded nanohole arrays. Intracellular axial sectioning was performed with an effective resolution as small as 20-nm.

[26H3-2] 16:15~16:30

Monte Carlo Model of Laser Doppler Perfusion Imaging in Skin Cancer Detection

Alireza Mowla, Thomas Taimre, Yah Leng Lim, and Aleksandar D. Rakic

The University of Queensland, Australia

We present a laser Doppler perfusion imaging model to map the perfusion in melanoma and non-melanoma skin cancers. We numerically investigate the use of neovascularization as an early detection method using Monte Carlo method to simulate the interactions of photons and skin tissue.

[26H3-3] 16:30~16:45

Optical Coherence Gating with Stimulated Emission

Fu-Jen Kao, Chun-Hui Yu, Shen-Shou Chung, and Wen-Chuan Kuo

National Yang-Ming University, Taiwan

Stimulated emission based optical coherence gating is established for feasibility study in tomography, which shows a depth resolution of approximately 66 μm.

[26H3-4] 16:45~17:00

Endoscopic Probe for Optical Coherence Tomography with Magnet Driving Device

Ziwei Pang[1] and Jigang Wu[1,2]

[1]Shanghai Jiao Tong University, China, [2]Tsinghua University, China

We proposed and implemented a magnetic-driven side imaging endoscopic probe for optical coherence tomography. The probe can achieve 360-degree unobstructed circumferential imaging with a 1.4-mm outer diameter, and thus suitable for many endoscopic applications.

[26H3-5] 17:00~17:15

In Situ Visualization of Collagen Fiber Produced by Cultured Osteoblasts Using Sensitive Second-harmonic-generation Microscopy Equipped with a 10-fs Mode-locked Ti:sapphire Laser

Eiji Hase[1], Katsuya Sato[1], and Takeshi Yasui[1,2]

[1]The Tokushima University, Japan, [2]Osaka University, Japan

In this paper, we constructed sensitive second-harmonic generation (SHG) microscopy equipped with a 10-fs Ti:Sapphire laser and succeeded to visualize collagen fibers produced by the cultured osteoblasts in situ.

[26H3-6] 17:15~17:30

Photonic Crystal Enhanced Fluorescence through Extraction of Dual Polarization Modes

Cheng-Sheng Huang, Yu-An Wu, and Po-Tsung Wu

National Chiao Tung University, Taiwan

In this paper, we demonstrate that the fluorescence collection efficiency of surface-bound fluorophores can be enhanced through coupling of fluorescence emission into both TE and TM resonant modes of a photonic crystal substrate.

[26H3-7] 17:30~17:45

Optically-tunable Multiple Switching Effects of Biopolymer Memory Devices

Yu-Chueh Hung, Yi-Tzu Lin, Chao-You Hung, and Waan-Ting Tu

National Tsing Hua University, Taiwan

We present optically-tunable switching effects based on biopolymer nanocomposite. Without the need of external doping, the nanocomposites can be manipulated by light to exhibit multiple switching behaviors, showing promises for memory device applications.