Room G (201)

Session Title 26G1 / [T08] Atomic Physics
Date & Time Wednesday, 26 August, 09:00 ~ 10:30
Session Chair Han Seb Moon (Pusan National University, Korea)

[26G1-1] 09:00~09:30 Invited Talk

Vortex Pair Creation and Annihilation in a Bose-Einstein Condensate

Woo Jin Kwon, Geol Moon, and Yong-Il Shin

Seoul National University, Korea

We describe our recent experiments where we studied creation and annihilation of vortex pairs in a highly oblate Bose-Einstein condensate. We measured the critical velocity for vortex shedding and investigated the thermal relaxation of two-dimensional superfluid turbulence.

[26G1-2] 09:30~09:45

Atomic Fountain for Atom Interferometry

Nan Li, Zhouxiang Xu, Hao Ying, Kaikai Huang, and Xuanhui Lu

Zhejiang University, China

We demonstrated a highly controlled atomic fountain which is realized by simultaneous detuning of the upward beams versus the downward beams. A fountain height of 90cm is achieved after fine adjustment.

[26G1-3] 09:45~10:00

Progress Towards a Strontium Optical Lattice Clock at NTSC

Wang Yebing[1,2], Liu Hui[1,2], Lu Benquan[1,2], Ren Jie[1], Xu Qinfang[1], Yin Mojuan[1], Kong Dehuang[1], Ma Jie[1], and Chang Hong[1]

[1]National Time Service Center, China, [2]University of Chinese Academy of Sciences, China

Stable narrow line lasers are built up and some precision measurements are performed. Based on the cold 88Sr atoms loaded in to one dimension optical lattice, a sideband resolved clock transition spectrum is obtained.

[26G1-4] 10:00~10:15

Stark and Zeeman Effects as Tools for Magnetic Diagnostics in Toroidal Plasmas

Jinseok Ko[1], Jinil Chung[1], and Maximilian Messmer[2]

[1]National Fusion Research Institute, Korea, [2]Eindhoven University of Technology, Netherlands

Doppler-shifted Stark and Zeeman effects are applied to the measurement of the magnetic structure that confines toroidal plasmas for nuclear fusion. Progress on these applications to the Korean tokamak is presented.

[26G1-5] 10:15~10:30

Ultrafast Laser-Driven Rabi Oscillation of Morris-Shore Transformed Multi-Level Atoms

Hyosub Kim, Yunheung Song, Han-Gyeol Lee, and Jaewook Ahn

KAIST, Korea

We show that the 24 energy levels involved in the D1 transition of atomic Rb^{85} are reduced to independent 12 two-level systems of a single Rabi frequency by MorrisShore transformation. Experiment performed with ultrafast laser interacting with cold atoms in a MOT confirms the prediction.

Room H (202)

Session Title 26H1 / [T09] Growth and Fabrications
Date & Time Wednesday, 26 August, 09:00 ~ 10:30
Session Chairs Yong-Hoon Cho (KAIST, Korea)
Tae Geun Kim (Korea University, Korea)

[26H1-1] 09:00~09:30 Invited Talk

Nitride-based Light-emitting Diodes Using Conducting Filament Embedded TCO

B. R. Lee, K. H. Kim, T. H. Lee, and Tae Geun Kim

Korea University, Korea

We present an electroforming transparent conductive electrode that enables current injection from metal to semiconductor, by forming conducting filaments (CFs) in wide-bandgap materials such as silicon nitride, and employ it as an n-type electrode for GaN-based vertical light emitting diodes to investigate the effect of the CF densities on the electrical and optical characteristics in VLEDs.

[26H1-2] 09:30~10:00 Invited Talk

Drastic Enhancement of Eu Emission from Red Light-emitting Eu-doped GaN in a Microcavity

Yasufumi Fujiwara, Tomohiro Inaba, Takanori Kojima, and Atsushi Koizumi

Osaka University, Japan

Eu-doped GaN (GaN:Eu) has been identified as a promising red emitter. A GaN:Eu layer was confined in a microcavity consisting of a Ag mirror and an AlGaN/GaN distributed Bragg reflector (DBR), resulting in drastic enhancement of Eu emission intensity.

[26H1-3] 10:00~10:15

Reflection Properties of Nano Textured Distributed Bragg Mirrors

Yoon-Jong Moon[1], Han-Kyeol Lee[1], Jin-Young Na[1], Sang-Woon Lee[2], and Sun-Kyung Kim[1]

[1]Kyung Hee University, Korea, [2]Ajou University, Korea

We designed nano-textured distributed Bragg reflectors and investigated their reflectance properties by conducting finite-difference-time-domain, mostly focusing on the effect of surface roughness.

[26H1-4] 10:15~10:30

Direct Growth of Thick AlN Template on Micro-circle Patterned-Si Substrate

Tinh Binh Tran, Hideki Hirayama, Noritoshi Maeda, Masafumi Jo, and Shiro Toyoda

RIKEN, Japan

A 8-μm-thick AlN template has been successfully directly grown on micro-circle patterned-Si substrate. Low surface roughness of 3.5 nm and both screw and edge dislocation densities are in the order of 10^8 /cm^2 have been obtained.