

=== 量子科学研究センターセミナーのご案内 2024/04/26 ===

R. Jason Jones 先生（アリゾナ大学）、Youjian Song 先生（天津大学）、Zhigang Zhang 先生・Ruoao Yang 先生（北京大学）が、横浜開催の国際会議 ALPS2024/OPIC2024 に参加される機会に、4/26 に本学を訪問されます。

つきましては下記の要領で、量子科学研究センター主催の研究セミナーを開催いたします。お招きする先生方は本学教員と長年の親交があり、レーザー光源・光周波数コム・分光応用などを対象とした幅広い研究成果を上げておられます。

本セミナーでは先生方に最先端の研究成果をご紹介します。4件のホットトピック講演をまとまっとうかがえる貴重な機会ですので、研究室の研究員、学生の皆様もお誘いあわせのうえ、奮ってご参加ください。

セミナー情報

日時：2024年4月26日（金）16:15～

場所：東6号館803室

主催：量子科学研究センター <http://www.ias.uec.ac.jp/>

	Time	Speaker	Title
1	30 min Talk 5 min Q&A	Prof. R. Jason Jones (University of Arizona)	Dual-Comb Spectroscopy from the IR to the Deep Ultraviolet
2	30 min Talk 5 min Q&A	Prof. Youjian Song (天津大学)	Ultra-high timing precision femtosecond lasers and applications
3	15 min Talk 3 min Q&A	Prof. Zhigang Zhang (北京大学)	Coherent stacking of femtosecond pulses to 10 mJ based on 1 GHz femtosecond fiber laser
4	15 min Talk 3 min Q&A	Dr. Ruoao Yang (北京大学)	Comb on silica: how does it change the comb performance

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講演詳細

[Talk 1 (30 min)]

Title： Dual-Comb Spectroscopy from the IR to the Deep Ultraviolet

Speaker：Prof. R. Jason Jones (University of Arizona)

Abstract：We utilize time-resolved dual-comb spectroscopy from the IR to the deep ultraviolet to measure evolving ionic, atomic, and molecular species within laser plasmas. Key parameters including atomic and

molecular temperatures and electron densities are characterized.

Bio. : R. Jason Jones is a Professor of Optical Sciences at the University of Arizona and holds the John P. Schaefer Endowed Chair in Optical Sciences. His research interests include ultrafast optics, nonlinear light-matter interactions, high-precision optical spectroscopy, and development and applications of femtosecond frequency combs. Dr. Jones received his PhD from the University of New Mexico in 2001. He worked as a research associate at JILA (a joint institute of the University of Colorado and the National Institute of Standards and Technology), until July 2006 when he left to join the Wyant College of Optical Sciences at the University of Arizona. He is a recipient of the NSF CAREER award and DARPA's Young Investigator awards and is a member of the American Physical Society and Optica (formerly Optical Society of America). He holds two US patents and has published over 50 peer-reviewed articles.

[Talk 2 (30 min)]

Title : Ultra-high timing precision femtosecond lasers and applications

Speaker : Prof. Youjian Song (天津大学)

Abstract : Low timing jitter mode-locked lasers (MLLs) and optical frequency combs (OFCs) have become indispensable tool for a variety of metrological applications. In this talk, I will present some recent progresses on characterizing and harnessing the timing property of MLLs and OFCs in your group. In the first part, we will show timing jitter characterization based on Asynchronous Optical Sampling (ASOPS) method and its application in electro-optic combs. A dual EO-comb system has been developed and utilized for high-speed surface profiling applications. In the second part, we will show an electrical controlled optical sampling (ECOPS) setup with record high timing precision and its length metrological application. Finally, we also show ultra-high precision timing probes can be applied to resolved intriguing multi-soliton dynamics in nonlinear dissipative systems.

Bio. : Youjian Song received the BS degree in Electronic Science and Technology, in 2004, the PhD degree in Optical Engineering, in 2009, from Tianjin University, Tianjin, China. From 2009 to 2011, he was a postdoctoral fellow in KAIST, South Korea. He joined Tianjin University as an Associate Professor in 2011. Currently, he is a full Professor in Tianjin University. He is a senior member of OPTICA and IEEE. His current research interests include low noise optical frequency combs and precision metrology. He has published over 150 academic papers, including Optica, Opt. Lett., Adv. Opt. Photon., App. Phys. Lett., etc. He delivered more than 20 invited talks and served as a committee member for CLEO, the Ultrafast Optics Conference and Nonlinear Photonics. He also received two times of Optica Publishing Group Outstanding Reviewer Recognition.

[Talk 3 (15 min)]

Title : Coherent stacking of femtosecond pulses to 10 mJ based on 1 GHz femtosecond fiber laser

Speaker : Prof. Zhigang Zhang (北京大学)

Abstract : High pulse energy at high repetition rate is the ultimate aim of laser development. Stacking many pulses from fiber laser amplifiers is one of the techniques. Currently we stacked 128 femtosecond pulses from a single fiber amplifier. The combined pulse energy is more than 10 mJ at a repetition rate of 1.5kHz, and the compressed pulse is 275 fs. More pulse energy at higher repetition rate is possible and is in progress.

Bio. : Zhigang Zhang received his Ph. D degree in physics from Monash University, Australia in 1992. From 1992 to 1994, he was a researcher at the Institute of Research and Innovation, Japan. From 1994 to 1995, he was an engineer at Luminex Inc. Tokyo, Japan. During 1996-2000, he worked at the Electrotechnical Laboratory, AIST, Japan. He became a professor at Tianjin University in 2000. Since 2004, he has been a professor at School of Electronics Engineering and Computer Science, Peking University. His research interests include mode-locked solid-state and fiber lasers, amplifiers, fiber optical frequency combs and their applications. Dr. Zhang is a Fellow of Optica.

[Talk 4 (15 min)]

Title : Comb on silica: how does it change the comb performance

Speaker : Dr. Ruao Yang (北京大学)

Abstract : Silica substrates have attracted increasing attention in the fields of optical component assembling and semiconductor packaging processes due to their exceptional thermal and mechanical stability. We present a fully integrated GHz mode-spaced optical frequency comb on a silica substrate with an overall volume of only about 8 liters. The comb is fully locked to a microwave reference signal and exhibits excellent long-term stability. This new form of the comb has the potential to promote the widespread applications in scientific and engineering applications beyond laboratories.

Bio. : Ruao Yang received the B.S. degree from the school of science, East China University of Science and Technology, Shanghai, China, in 2015, the M.E. degree from the Faculty of Engineering, The University of Sydney, Sydney, NSW, Australia, in 2018, and the Ph.D. degree from the School of Electronics, Peking University, Beijing, China, in 2023. He is currently a “Boya” Postdoctoral Fellow at Peking University. His research interests include mode-locked fiber lasers, optical frequency combs and their applications in metrology, astronomy, and spectroscopy.
