

=== 量子科学研究センターセミナー/q-Nexus セミナーのご案内 ===

Wonkeun Chang 先生（南洋理工大学，シンガポール）および同研究室の研究者・学生が、6月2日～7月31日の日程で本学を長期訪問されています。本訪問は、JSPS 外国人招へい研究者および JSTNEXUS Y-tec によるものです。これに伴い、下記の通りセミナーを開催いたしますので、ご案内申し上げます。

Wonkeun Chang 先生は、機能的中空コア光ファイバー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、本トピックを中心に最近の研究成果についてご講演いただく予定です。Wonkeun Chang 先生は、ここ数年で複数回本学を訪問されています。本学メンバーとの研究交流の良い機会となるかと存じますので、研究室の研究者、学生の皆様もお誘いあわせのうえ、どうぞ奮ってご参加ください。

日時：2026年6月19日(金) 14:40 - 15:40

場所：東6号館 803室（対面のみ、申込不要）

主催：（共同開催）量子科学研究センター，UEC-SHIP q-Nexus

Speaker: Assoc. Prof. Wonkeun Chang (Nanyang Technological University, Singapore)

Title: Rethinking Light Guidance: Hollow-Core and Solid Antiresonant Fibers for High-Power and Wavelength-Tailored Photonics



Abstract: Recent advancements in optical fiber technology have fundamentally expanded how we guide and manipulate light. This presentation outlines our group's research effort, beginning with the foundational physics of antiresonant hollow-core fibers. We first highlight their exceptional versatility as a nonlinear optics platform, focusing on femtosecond pulse generation spanning the deep-ultraviolet to the mid-infrared regimes. We then explore how antiresonant guidance mechanisms can be engineered in solid glass to bypass the peak power limitations of conventional single-mode fibers. This leads to the introduction of a novel hybrid guidance fiber that merges antiresonant and index-guiding principles. We discuss how this co-guidance is a promising approach to achieve an ultra-large mode area while preserving excellent beam quality and robustness against mechanical bending for compact ultrafast lasers with unprecedented peak powers. The talk concludes by demonstrating how we address the fabrication challenges of these complex fiber geometries through 3D printing. By integrating additive manufacturing into fiber fabrication, we present a highly reliable pathway toward creating next-generation microstructured fibers free from conventional geometric limitations.

Biography: Dr. Wonkeun Chang is an Associate Professor at the School of Electrical and Electronic Engineering at Nanyang Technological University, Singapore. He received his BTech (Hons) in Optoelectronics and MSc in Physics from The University of Auckland, followed by a PhD in Physics from The Australian National University. After completing his PhD, he joined the Max Planck Institute for the Science of Light, where he developed expertise in ultrafast light-matter interactions in hollow waveguides. In 2013, Dr. Chang was granted a Discovery Early Career Researcher Award from the Australian Research Council and led a project on complex pulse dynamics and extreme events in ultrafast laser systems at The Australian National University. He joined to NTU in 2017, and he has continued his energetic research to this day. His research interests include microstructured optical fibers, novel light source development, and femtosecond laser systems.

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