58th RAP Seminar

The 58th Seminar on RIKEN Center for Advanced Photonics

Language: Japanese

Date: **October 19(Fri) 16:00 - 17:00, 2018**

Location: **W319, 3F, Cooperation Center, Wako Campus, RIKEN**

(理研 和光キャンパス 研究交流棟 3階会議室 W319)

Title: **Versatile optical wave manipulation by use of optical frequency comb and its applications**

光コムによる光波の自在操作と応用展開

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Optical frequency comb technology has been successfully used as an "ultraprecise frequency ruler" and revolutionized various science and technology fields based on absolute optical frequency measurements. However, there are still broad potential application fields open to the comb. Optical frequency comb can be used as a tool for high-precision and versatile control of the full properties of optical waves as an “optical synthesizer”.

In this talk, after introducing background of the optical frequency comb, the development of fiber-based frequency combs and their various metrology applications which have been conducted in our group are presented. The topics include such as dual-comb time-domain and coherent spectroscopy of solids, high-accuracy and long distance measurement with self-correction of air refractive index for practical environment, and one-shot 3D imaging with high accuracy and wide range. By precisely controlling the frequency and phase of the optical frequency combs, metrology applications with ultra-high accuracy tog ether with ultra-wide dynamic range, multi-dimensionality, and versatile controllability are realized.

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