

# “Heterogeneous III/V-on-silicon-nitride mode-locked lasers”

Prof. Bart Kuyken

Ghent University  
Professor

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場所: 理学部1号館3階340号室+ZOOMでの開催(事前登録制)

## 【Abstract】

Mode-locked lasers have applications in LIDAR, spectroscopic sensing, and optical communication, among others. Yet, many systems still rely on fiber or solid-state bulk lasers. On-chip solutions are desired to reduce the cost and footprint of these systems and enable their widespread use. Electrically pumped on-chip mode-locked lasers have been demonstrated in monolithic III-V and heterogeneous III-V-on-silicon platforms. To realize low-noise, narrow-linewidth on-chip mode-locked lasers, one typically relies on the use of extended passive waveguide cavities. Heterogeneous III-V-on-silicon and monolithic InP-based extended-cavity mode-locked lasers have been reported, yet with limited on-chip pulse energies ( $\leq 0.6$  pJ). Their performance in terms of pulse energy and noise is limited by two-photon and the associated free-carrier absorption, and the relatively high waveguide loss.

In the seminar, we will show III-V-on-silicon-nitride electrically pumped mode-locked laser technology enabling high pulse energy and low noise. Special focus will be given to the integration technique that is used: micro-transfer printing. This technique allows next to the integration of the amplifier for the co-integration of high speed lithium niobate modulators, high speed photo-detectors and so on.

使用言語 : 英語 (English)  
紹介教員 : 井手口 拓郎  
本件連絡先 : seminar-office@utripl.u-tokyo.ac.jp

申込方法 : Google forms(下記)にて参加の申し込みを行ってください。  
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