

## Solid-State Frequency Combs with Repetition Rates from Tens of kilohertz to 10 Gigahertz

Optical frequency combs provide a phase-coherent link between optical and microwave domains, driving advances in precision metrology, spectroscopy, and time–frequency transfer. High-repetition-rate combs are essential for applications such as low-noise microwave synthesis, high-speed dual-comb spectroscopy, and astronomical spectrograph calibration. Conversely, low-repetition-rate combs are fundamental for high-resolution spectroscopy and for extending frequency combs into the vacuum and extreme ultraviolet (VUV and XUV) regions.

I will present two complementary solid-state frequency comb platforms operating in the near-infrared (NIR). The first, centered at  $1.56\ \mu\text{m}$  with a 10 GHz repetition rate, is designed for absolute frequency calibration of astronomical spectrographs. The second, operating around  $1\ \mu\text{m}$  with a tunable repetition rate as low as 40 kHz, targets the next generation of VUV and XUV frequency combs.