

Plenary Talk

PV II Mon 9:45 Paulussaal

Frequency Combs and Dual-Comb Interferometry —

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Optical frequency combs have revolutionized time and frequency metrology by providing rulers in frequency space that measure large optical frequency differences and/or straightforwardly link microwave and optical frequencies. Such combs enable precision laser spectroscopy, tests of fundamental physics and provide the long-missing clockwork mechanism for optical clocks.

One of the most successful applications of frequency combs beyond their original purpose has been dual-comb interferometry. An interferometer can be formed using two frequency combs of slightly different line spacing. Dual-comb interferometers without moving parts are fundamentally different from any other type of interferometers for broadband light sources: they perform direct frequency measurements, without geometric limitations to resolution. They outperform state-of-the-art devices in an increasing number of fields including spectroscopy and three-dimensional imaging, offering a unique host of features such as frequency measurements, accuracy, precision, speed.

This talk will provide an introduction to dual-comb interferometry and will survey its latest exciting developments.