



# Das Institut für Optische Technologien lädt ein zum Kolloquiumsvortrag

## Mode-locking without saturable absorber

Prof. Dr. Günter Steinmeyer

Humboldt-Universität zu Berlin / Max-Born-Institut, Berlin

Mode-locking is the key technology for generation of femtosecond and attosecond pulses, which are the shortest controllable events in nature. In order to compress the energy content of a laser cavity into a short pulse, one has to introduce an intracavity saturable absorber mechanism which favors pulsed over conventional continuous operation. On the theory side, it is generally agreed that one cannot mode-lock a laser without an effective saturable absorber. In the past decade, however, there have been numerous reports that seem to defy this paradigm. For example, self mode-locking (or self frequency-comb generation) has been reported for numerous semiconductor lasers. These reports initiated a controversial debate in the ultrafast optics community, who declared them a measurement artifact. As a possible resolution of this controversy, it has now become clear that four-wave mixing (FWM) effects can substitute for the saturable absorber. However, the resulting mode-lock is only dynamically stable, and there is no static lock as in conventional mode-locking. In turn, pulse-to-pulse coherence is far from perfect, and the resulting frequency combs are not equidistant either. Despite these imperfections, the compactness of FWM mode-locked devices makes them attractive for use in comb spectroscopy.

Einladender: Prof. Dr. Ulrich Wittrock

Prof. Dr. Michael Bredol  
Prof. Dr. Thomas Jüstel  
Prof. Dr. Ulrich Kynast  
Prof. Dr. Konrad Mertens  
Dr. Stephanie Möller  
Prof. Dr. Ulrich Wittrock

[www.fh-muenster.de/iot](http://www.fh-muenster.de/iot)

Ort:  
Raum D 145  
(Gebäudeteil D, Parkplatz P3)  
Stegerwaldstraße 39  
48565 Steinfurt

Datum:  
Mittwoch, 04.12.2019

Uhrzeit:  
17.00 Uhr c.t.

