

Mode-locked laser diodes and their application in terahertz technology

Abstract: Mode-locked laser diodes (MLLDs) represent the most compact class of ultrafast lasers. They can be monolithically integrated, are electrically excitable and are characterized by high efficiency. In this talk, basic mechanics of mode locking of laser diodes will be explained. Special attention will be paid to the stability and tunability of 2-segment MLLDs. In the second part of the talk, the application in terahertz systems will be discussed.

Bio: Jan C. Balzer received the Dipl.-Ing. (FH) degree in telecommunications from the Dortmund University of Applied Sciences, Germany, in 2008, and the Master of Science degree in electrical engineering and information technology and the Dr.-Ing. degree from Ruhr University Bochum in the group of Prof. Martin Hofmann, Bochum, Germany, in 2010 and 2014, respectively. In 2015, he has joined the research group of Prof. Martin Koch, Philipp University of Marburg, Marburg, Germany, as a Postdoctoral Fellow. Since 2017, he has been an Assistant Professor for terahertz systems at the Faculty of Engineering, University of Duisburg-Essen, Germany.

His scientific interest includes ultrafast laser diodes. From here, he moved to the field of terahertz radiation generation and applications. He made contributions in the field of compact laser diode-driven THz systems, 3D-printed THz devices, high-resolution THz imaging, and THz material characterization.

