
Modulation of VCSELS: Breaking the Limit of Relaxation Oscillation

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Rapid expanding applications such as AI-related computation have exacerbated demands for higher modulation speed of semiconductor lasers such as VCSELS. At the same time, design optimization for high-speed modulation of semiconductor lasers has reached the saturation stage where significant progress in modulation speed becomes more and more difficult. It is high time to focus on different mechanisms and go beyond the limit imposed by the relaxation oscillation. In this talk, experimental as well as simulation results exploring inter-mode and inter-VCSEL couplings would be presented.

Short Bio: **Cun-Zheng Ning** is a Chair Professor at Shenzhen Technology University. Between 2006 and 2021, he was a professor of electrical engineering at Arizona State University. He was a Professor at Tsinghua University between 2015-2022. His many achievements have been widely reported in news media and tech magazines such as Science or Nature Photonics. He was recognized for the first white laser demonstration as “The Best of Tech in 2015” and the “Top 10 Engineering Achievements” by Popular Science. MIT Technology called the first plasmonic nanolaser by Ning and Hill “the first to overcome the wavelength constraints on the size of lasers”. Dr. Ning is a winner of several awards including NASA and NASA Contractor Awards, NASA Space Act Patent Awards, CSC Technical Excellence Award, and IEEE/Photonics Society Distinguished Lecturer Award (2007-2009), and most recently the Humboldt Research Award. Dr. Ning is also a Fellow of the Optical Society (OSA), IEEE, and the Electromagnetic Academy.