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Terahertz interactions in Graphene: Consequences for ultra-high-speed electronics

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In this presentation we will review the electron dynamics in graphene subject to ultrafast, picosecond-timescale electrical signals. The conduction properties of graphene in such ultrafast fields, corresponding to terahertz (THz) field oscillation frequencies, is crucial for understanding and prediction of graphene performance in ultra- high-speed (opto-) electronic devices such as THz transistors, modulators, detectors etc. The physical picture of ultrafast (photo-) conduction in graphene will be presented, and its consequences for graphene performance in various ultra-high-speed electronics applications will be discussed.

Biography

Dmitry Turchinovich received his PhD in Physics from the University of Freiburg in 2004. After a post-doctoral stay at Utrecht University, he moved to Technical University of Denmark, where he was faculty until 2014. Since 2012, he is heading the "Ultrafast dynamics and Terahertz spectroscopy" research group at Max Planck Institute for Polymer Research in Mainz, Germany. He has published over 35 journal papers and serves on the committees of several international conferences. He is a recipient of several prestigious grants such as Gottfried Daimler- und Karl Benz Stiftung Fellowship and European Union Career Integration Grant.

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