



Berliner Physikalisches Kolloquium

im Magnus-Haus, Am Kupfergraben 7, 10117 Berlin

Eine gemeinsame Veranstaltung der Physikalischen Gesellschaft zu Berlin e.V.,
der Freien Universität Berlin, der Humboldt-Universität zu Berlin,
der Technischen Universität Berlin und der Universität Potsdam
– gefördert durch die Wilhelm und Else Heraeus-Stiftung –

Am Donnerstag, dem **3. Juni 2021**, um **18:30 Uhr**

spricht

Prof. Dr. Dmitry Turchinovich
Fakultät für Physik, Universität Bielefeld,

über das Thema

„Terahertz physics of graphene, possibly the most non-linear material we know“

Moderation: Michael Gensch, Technische Universität Berlin und Deutsches Zentrum für Luft- und Raumfahrt, Berlin

The interaction of graphene with terahertz (THz) electromagnetic waves is dominated by collective, thermodynamic response of ultrarelativistic Dirac electrons in graphene to the THz excitation [1]. Thanks to excellent conduction properties of Dirac electrons, the energy of incident THz radiation is very efficiently transferred to electronic system of graphene, and electronic temperature in graphene becomes strongly modulated by the THz excitation [1–3]. As a result, the THz conductivity of graphene becomes highly non-linear, leading to very strong THz saturable absorption [1] and extremely efficient THz high harmonics generation [2]. The effective nonlinear coefficients of graphene in the THz frequency range exceed that of any known material by many orders of magnitude [2,3]. This possibly makes graphene the most nonlinear electronic material we know.

[1] Z. Mics et al., Nat. Commun. 6, 7655 (2015).

[2] H. A. Hafez et al., Nature 561, 507–511 (2018).

[3] H. A. Hafez et al., Adv. Opt. Mater. 8, 1900771 (2020).