Sonderforschungsbereich 1277
Emergent Relativistic Effects in Condensed Matter -
From Fundamental Aspects to Electronic Functionality

SFB-Seminare

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Ort: PHY 2.0.31

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Thema: Shubnikov-de Haas oscillations in optical conductivity of monolayer MoSe₂

Abstract

Atomically thin transition metal dichalcogenides (TMD) exhibit a unique combination of extraordinary properties, including valley-contrasting optical response, ultralarge exciton binding energies, and strong exciton-carrier interactions, which make them a promising platform for exploration of condensed matter physics. In parallel, owing to large carrier effective masses, TMD monolayers feature low cyclotron energies, which together with spin-valley locking and finite Berry curvature give rise to a unique structure of spin-valley polarized Landau levels (LLs) that has been recently demonstrated in several transport studies [1-4]. However, to date, the optical signatures of such LLs have been uncovered only for large electron densities [5], where exciton binding is strongly reduced, resulting in the presence of band-to-band inter-LL transitions in the absorption spectrum.


Gastgeber: Dr. Alexey Chernikov