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Magnetotransport in topological metals

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Topological metals continue to attract attention as novel gapless states of matter. While there by now exists an exhaustive classification of possible topologically nontrivial metallic states, their observable properties, that follow from the electronic structure topology, are less well understood.
In this talk I will present my recent work on magnetotransport phenomena in topological metals, which may be related to the chiral anomaly. I will demonstrate that the chiral anomaly leads to strong anisotropic magnetoresistance in such materials, which manifests in very unusual negative longitudinal magnetoresistance and planar Hall effect. I will also argue that a smoking-gun feature of the chiral anomaly in topological metals is the existence of propagating chiral density modes even in the regime of weak magnetic fields. Finally, I will show that the optical conductivity of such metals exhibits an
extra peak, which exists on top of the standard metallic Drude peak. The spectral weight of this peak is transferred from high frequencies and its width is proportional to the chiral charge relaxation rate.

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