UNIVERSITÄT DUISBURG ESSEN

Offen im Denken

Theorie-Kolloquium WS 2024/25
Fr 11.10.2024, 14:00-15:30
MC 351 & online (URL in E-Mail)

udue.de/TheoKoll

Solid-state Spacetime

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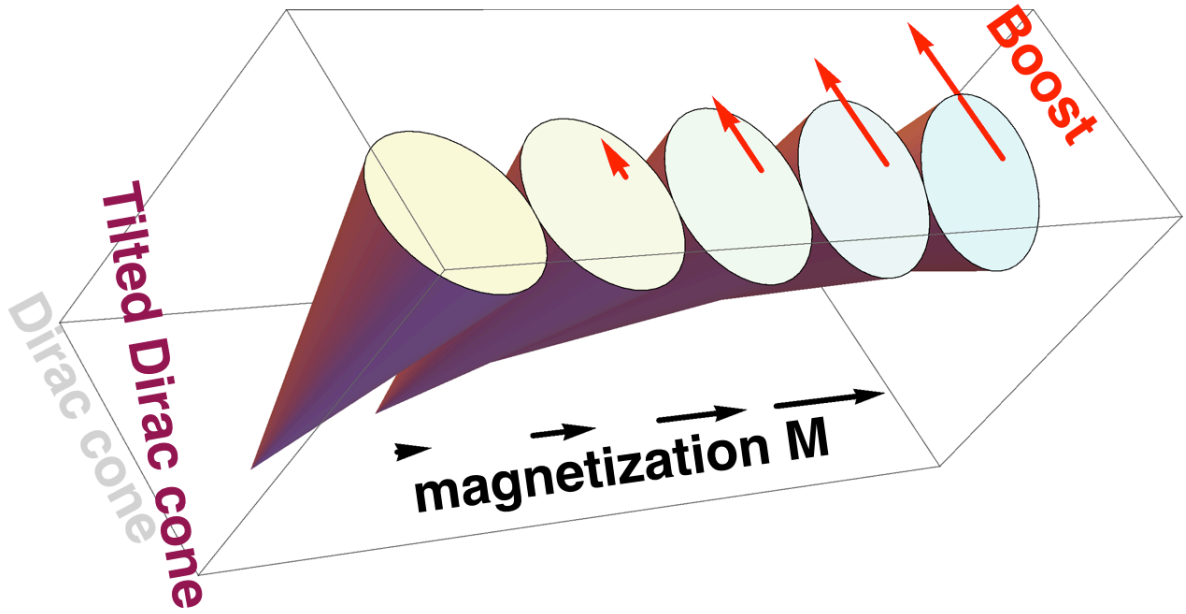
RWTH Aachen



Frame fields (FFs) are collections of basis vectors. A constant FF represents a flat manifold, whereas a non-uniform FF — e.g. basis vectors on the surface of a sphere — represents a curved underlying manifold. As will be shown in this talk, it is a profound fact that the Dirac band crossing upon tilting gives rise to a spacetime FF. Hence, the engineering of tilting of band structures at their crossing point is equivalent to fabrication of FFs in the lab.

We discuss two experimental platforms where the band crossing can be manipulated. The FFs produced in this way bring strongly curved spacetime within the reach of solid-state physics labs where mysterious properties of curved spacetime can be investigated or even harnessed for novel technologies.