

SFB – Colloquium

Speaker: **Prof. Dr. Hrvoje Petek**

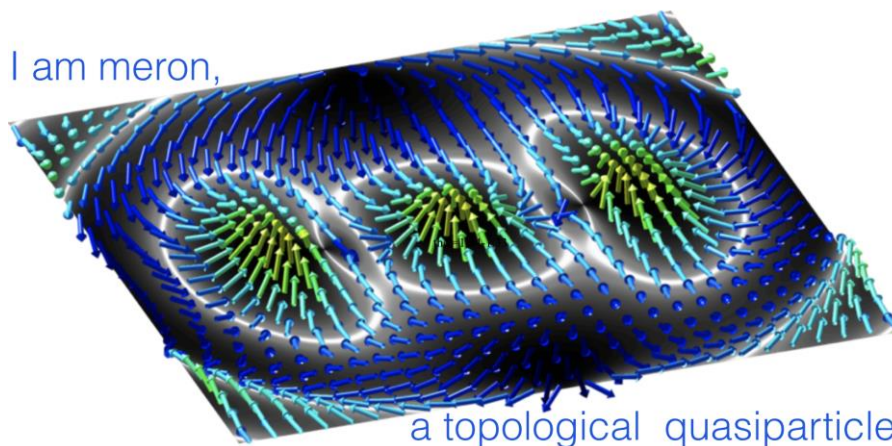
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Date: Tuesday, 09 November 2021, 14:15,
H34 and via Zoom

Topic: Dressing matter with vectorial optical fields



Abstract:

Vectorial light has complex interactions with matter, which I study by ultrafast photoemission spectroscopy and microscopy. Applying an optical field introduces a time-periodic potential that transiently dresses the electron flow in momentum eigenstates of space periodic ionic potentials. The Floquet engineering of electronic bands of metals appears in nonlinear multiphoton photoemission spectroscopy. Furthermore, optical fields carry optical and spin angular momenta, which define the topological nature of the light-matter interaction. This is evident in nanofemto ultrafast photoemission electron microscopy movies of the consequent vectorial textures when light performs Poincaré engineering of topologically trivial matter. Such fields transiently break the time reversal symmetry lighting up interactions that are dark to vacuum light.