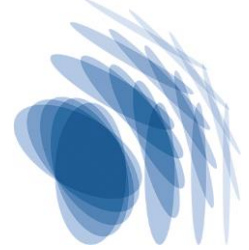


# Max-Planck-Institut für Struktur und Dynamik der Materie

Max Planck Institute for the Structure and Dynamics of Matter



IMPRS UFAST Call for PhD applications 2021/2022



**Floquet and cavity engineering of Kagome metals**

**M. Sentef-1**

<b>Title of PhD Project</b>	<b>Floquet and cavity engineering of Kagome metals</b>
<b>Type</b>	Theory
<b>Supervisor(s)</b>	Dr. Michael Sentef, Prof. Dante Kennes
<b>Affiliation(s):</b>	Max Planck Institute for the Structure and Dynamics of Matter RWTH Aachen University
<b>Number of positions:</b>	1
<b>Abstract:</b>	Kagome metals (AV <sub>3</sub> Sb <sub>5</sub> , A=K,Cs,Rb) have recently been shown to host a plethora of exciting states of matter, including chiral charge density waves that break time-reversal symmetry hinting at orbital loop current order, a giant anomalous Hall effect, and (potentially unconventional) superconductivity. The control of the Hall effect by magnetic fields suggests the possibility that control over the many-body states in this class of materials is also possible by Floquet (laser pulses) or cavity engineering with quantum light. In this project, the PhD candidate will investigate the interplay of correlations, topology, and light-matter coupling in tight-binding models. The goal is to identify regimes of laser driving and/or cavity-materials coupling in which the phases can be significantly modified, or even switched, and to predict experimental consequences that can be measured by ultrafast photoemission spectroscopy and transport experiments.
<b>Contact person for scientific questions about the project:</b>	Michael Sentef: <a href="mailto:michael.sentef@mpsd.mpg.de">michael.sentef@mpsd.mpg.de</a> Dante Kennes: <a href="mailto:dante.kennes@rwth-aachen.de">dante.kennes@rwth-aachen.de</a>

