MAX PLANCK INSTITUTE
FOR THE STRUCTURE AND DYNAMICS OF MATTER

ANNOUNCEMENT - TALK

Title: **Scanning time-resolved optical studies on Kagome superconductors**

Abstract:
The kagome lattice provides a fascinating playground to study geometrical frustration, topology and strong correlations. The newly discovered kagome metals AV3Sb5 (A =K, Rb, Cs) exhibit exotic phases including charge density waves (CDWs) and superconductivity. In our study, we perform scanning birefringence and circular dichroism (CD) microscopy on CsV3Sb5. The scanning birefringence demonstrate sixfold rotational symmetry breaking in the CDW phase and three domains that are 120 degrees to each other. The emergence of opposite CD domains within the same birefringence domain, along with field-induced CD switching, indicate broken time reversal symmetry. Furthermore, ultrafast pump-probe reflectivity measurements
reveal a splitting of charge density wave induced phonon modes in all three birefringence domains. Such a breaking in degeneracy corroborates the six-fold rotation symmetry breaking in the charge ordered phase.

References
[1] Y. Xu, Z. Ni, Y. Liu, B. Ortiz, Q. Deng, S. Wilson, B. Yan, L. Balents, and Liang Wu* *"Three-state nematicity and magneto-optical Kerr effect in the charge density waves in kagome superconductors."* Nature Physics 18,1470-1475 (2022)
[2] Q. Deng, H. Tan, B. R. Ortiz, S. D. Wilson, B. Yan, and Liang Wu*
„Revealing Rotational Symmetry Breaking Charge-density Wave Order in Kagome Superconductor by Ultrafast Pump-probe Experiments" Under review

Date/Time: **Thursday, Dec 12th at 16:00**
Location: **MPSD 900.EG.136**

Speaker: **Liang Wu**
Affiliate: University of Pennsylvania