ID de Contribution: **263** Type: **Poster**

Electron-photon Chern number in cavity-embedded 2D moiré materials

We explore theoretically how the topological properties of 2D materials can be manipulated by cavity quantum electromagnetic fields for both resonant and off-resonant electron-photon coupling, with a focus on van der Waals moiré superlattices. We investigate an electron-photon topological Chern number for the cavity-dressed energy minibands that is well defined for any degree of hybridization of the electron and photon states. While an off-resonant cavity mode can renormalize electronic topological phases that exist without cavity coupling, we show that when the cavity mode is resonant to electronic miniband transitions, new and higher electron-photon Chern numbers can emerge.

\[1\] Danh-Phuong Nguyen, Geva Arwas, Zuzhang Lin, Wang Yao and Cristiano Ciuti, **Electron-photon Chern number in cavity embedded 2D moiré materials** [arXiv:2303.08804]

Affiliation de l'auteur principal

Université Paris Cité, CNRS, Matériaux et Phénomènes Quantiques (MPQ)

Auteurs principaux: CIUTI, Cristiano (Université Paris Cité, CNRS, Matériaux et Phénomènes Quantiques (MPQ)); NGUYEN, Danh-Phuong (Université Paris Cité, CNRS, Matériaux et Phénomènes Quantiques (MPQ)); ARWAS, Geva (Université Paris Cité, CNRS, Matériaux et Phénomènes Quantiques (MPQ)); YAO, Wang; LIN, Zuzhang

Orateur: NGUYEN, Danh-Phuong (Université Paris Cité, CNRS, Matériaux et Phénomènes Quantiques (MPQ))

Classification de Session: Session Poster 2: MC1, MC4, MC8, MC10, MC12, MC14, MC20, MC21, MC23, MC24, MC25, REDP

Classification de thématique: MC21 Matériaux quantiques : des prédictions à l'observation