

Chez Pierre

Presents ...
Tuesday, May 14, 2024
12- 1:00 pm
Duboc Room – 4-331



Special Chez Pierre Seminar

Nagaosa Naoto, RIKEN Center for Emergent Matter Science (CEMS)

"Photocurrent without photo-induced carriers"

Photo-induced current is an important phenomenon from the viewpoint of both the fundamental physics and applications to solar cell and photo-detector. Recently, geometric nature of the photocurrent of bulk-origin in noncentrosymmetric quantum materials attracts lots of attention both theoretically and experimentally. In this talk, I will discuss that this geometric current is analogous to the polarization current in ferroelectrics [1-3], and does not require the charge carriers excited by the light. It is induced by the exciton [4] and even the virtual inter-band transitions which is coupled to the magnon [5] and phonon [6,7].

- [1] T. Morimoto and N. Nagaosa, *Sci. Adv.* **2**, e1501524 (2016).
- [2] H. Ishizuka and N. Nagaosa, *Proc. Natl. Acad. Sci.* **118** (10) e2023642118 (2021).
- [3] J. Ahn, G.Y. Guo and N. Nagaosa, *Phys. Rev. X* **10**, 041041 (2021).
- [4] T. Morimoto and N. Nagaosa, *Phys. Rev. B* **94**, 035117 (2016).
- [5] T. Morimoto and N. Nagaosa, *Phys. Rev. B* **100**, 235138 (2019).
- [6] Y. Okamoto et al., *Proc. Natl. Acad. Sci.* **119** (14), e2122313119 (2022).
- [7] T. Morimoto and N. Nagaosa, arXiv:2402.03768 (2024).