

SAG SEMINAR

Geometry and topology in optical responses of quantum materials

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Online via ZOOM

Studies on optical responses of solids have the long history, and have been considered to be well established. However, a new development has been on-going recently, which explores the geometric and topological nature of the electronic states in solids and its crucial role in optical processes including those in nonequilibrium states.

In this talk, I will discuss the geometry and topology in the optical responses both in linear and nonlinear regimes, which includes (i) shift and injection currents in noncentrosymmetric quantum materials related to Berry phase, and (ii) Riemannian geometry in nonlinear optical responses, and (iii) topological spin textures in nonequilibrium state.

References

- [1] J. Ahn and N. Nagaosa, Nature Communications 12, 1617 (2021)
- [2] T. Morimoto and N. Nagaosa, Sci. Adv. 2, e1501524 (2016).
- [3] J. Ahn, G.Y, Guo and N.Nagaosa, Phys. Rev. X 10, 041041
- [4] J. Ahn, G.Y, Guo, N.Nagaosa, A. Vishwanath, Nature Phys. to appear.
- [5] X.X.Zhang and N.Nagaosa, preprint

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