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**Axionic instability near topological quantum phase transition**

TATSUSHI IMAEDA, YUKI KAWAGUCHI, YUKIO TANAKA, Department of Applied Physics, Nagoya University, MASATOSHI SATO, Yukawa Institute for Theoretical Physics, Kyoto University — Recently, axion electrodynamics in topological materials is one of the hot topics in condensed matter physics[1-3]. In particular, it has been pointed out that axion electrodynamics exhibits instability with exotic electromagnetic response in the presence of background electric fields [2]. In the presentation, we discuss the instability due to dynamical axion field near a topological phase transition, where the axion field may have a large fluctuation decreasing the critical electric field of the instability. We report the electro-magnetic response of the axion field using two different model Hamiltonians.

- [1] X.-L. Qi *et al.*, Phys. Rev. B **78**, 195424 (2008).
- [2] R. Li *et al.*, Nat. Phys. **6**, 284 (2010).
- [3] H. Ooguri *et al.*, Phys. Rev. Lett. **108**, 161803 (2012).

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