Abstract Submitted
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Gauge-invariant electromagnetic response of a chiral $p_x + ip_y$ superconductor[1] ROMAN LUTCHYN, PAVEL NAGORNYKH, VICTOR YAKOVENKO, University of Maryland — We study electromagnetic properties of spin-triplet superconductors with chiral $p_x + ip_y$ symmetry of the pairing order parameter. As a result of spontaneously broken time-reversal symmetry, the electromagnetic response of $p_x + ip_y$ superconductor contains additional (anomalous) terms that are not present in conventional superconductors. Using effective action approach, we show that in $p_x + ip_y$ superconductors an external electric field may generate transverse Hall-like currents which depend explicitly on the chirality of the pairing order parameter. We also find an analog of the London equation in the anomalous electromagnetic response which implies complete screening of Cooper-pair intrinsic orbital momentum. The implications of our results to the experiments on Sr_2RuO_4[1,2] are discussed.
[1] J. Xia *et. al.* Phys. Rev. Lett. **97**, 167002 (2006)
[2] J. R. Kirtley *et. al.* Phys. Rev. B **76**, 014526 (2007)

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