Topological Thermoelectric Response due to Fluctuating Superconductivity

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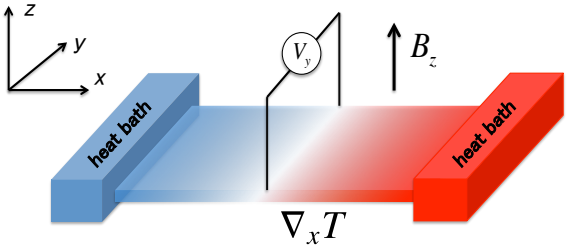
- Thermoelectric (Nernst) Effect

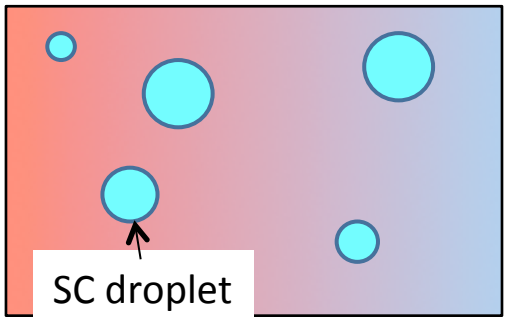


ν^{NE} : Nernst Coefficient

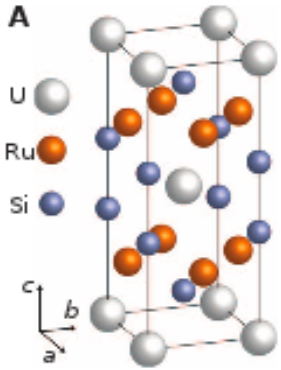
$$\nu^{NE} \approx \frac{\alpha_{xy}}{B_z \sigma_{xx}}$$

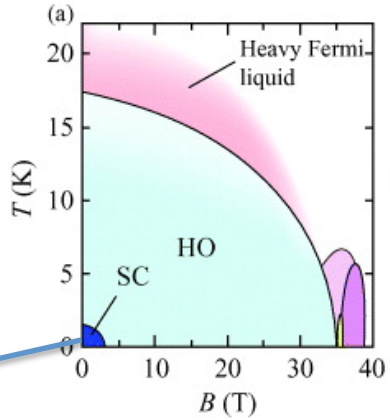
$$\vec{J}_e = \sigma \vec{E} + \alpha(-\vec{\nabla} T)$$

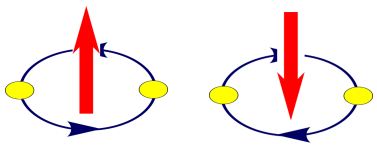
- T>Tc (SC Fluctuation Regime)



- URu_2Si_2 (Weyl-type Chiral SC)





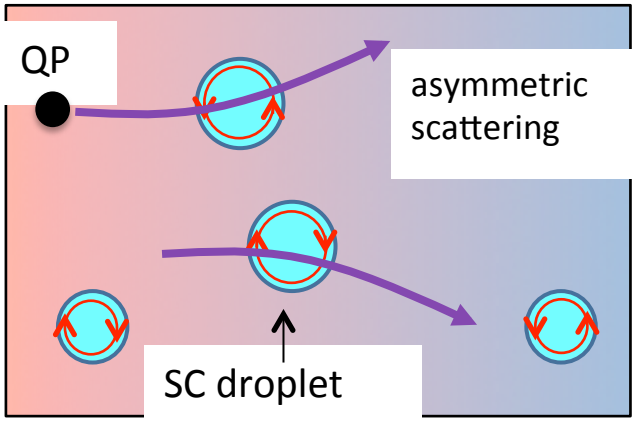


: Cooper pairs with angular momentum

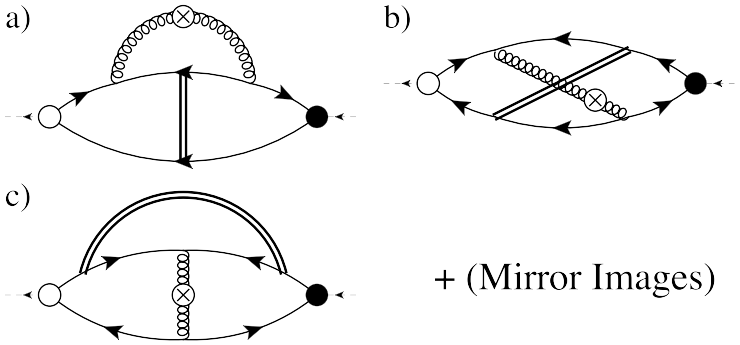
$$\Delta_k \propto k_z(k_x \pm \mathrm{i}k_y)$$

…Chiral Superconductor (Weyl SC)

- New mechanism for Nernst effect



corresponding diagrams



Well explain exp. results in URu_2Si_2 !!

✓ Large Nernst Effect in Clean Systems
(consistent with the exp.,
different from any previous theories of SC fluc.)

✓ Temperature dependence
in good agreement with that of the exp.

Temp. dep.: V.S. Experiment