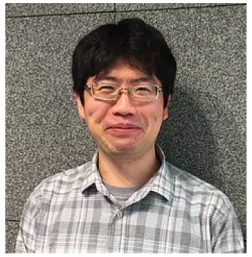
On the Anomaly of the Electromagnetic Duality of the Maxwell Theory

Chang-Tse Hsieh (Kavli IPMU & ISSP, UTokyo)

CTH-Tachikawa-Yonekura, arXiv:**1905.08943**



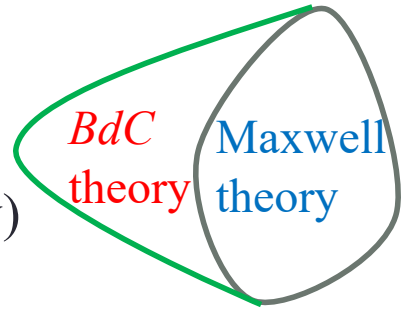
- We consider **4d Maxwell theory** in the situation where going around nontrivial paths in the spacetime involves EM duality transformation

e.g. $$\mathbf{E}(x+L,y,z)=\mathbf{B}(x,y,z)$$
$$\mathbf{B}(x+L,y,z)=-\mathbf{E}(x,y,z)$$

➢ We found

*Anomaly of EM duality of Maxwell = **56** times that of a chiral fermion*

➢ The interpretation is twofold: one is by the **5d bulk SPT** (top. *BdC* theory) phase characterizing the anomaly, and the other is by the properties of a **6d SCFT** (E-string theory)



➢ Our result reproduces, as a special case, the known anomaly of the **all-fermion electrodynamics** discovered in the last few years