

So the minimal bulk theory for a CFT with a conserved U(1) current is the *Einstein-Maxwell* theory with a cosmological constant

$$\mathcal{S} = \frac{1}{4g_M^2} \int d^4x \sqrt{g} F_{ab} F^{ab} \\ + \int d^4x \sqrt{g} \left[-\frac{1}{2\kappa^2} \left(R + \frac{6}{L^2} \right) \right].$$

This action is characterized by two dimensionless parameters: g_M and L^2/κ^2 , which are related to the conductivity $\sigma(\omega) = \mathcal{K}$ and the central charge of the CFT.