

For a U(1) conserved current  $J_\mu$  of the CFT, the corresponding bulk operator is a U(1) *gauge* field  $A_\mu$ . With a Maxwell action for the gauge field

$$\mathcal{S}_M = \frac{1}{4g_M^2} \int d^{D+1}x \sqrt{g} F_{ab} F^{ab}$$

we have the bulk-boundary correspondence

$$\begin{aligned} \langle J_\mu(\boldsymbol{x}_1) \dots J_\nu(\boldsymbol{x}_n) \rangle_{\text{CFT}} = \\ (Z g_M^{-2})^n \lim_{r \rightarrow 0} r_1^{2-D} \dots r_n^{2-D} \langle A_\mu(\boldsymbol{x}_1, r_1) \dots A_\nu(\boldsymbol{x}_n, r_n) \rangle_{\text{bulk}} \end{aligned}$$

with  $Z = D - 2$ .