

$$S = \int d^4x \sum_{n=0}^{\infty} \left[\partial^M \hat{\Phi}^{(n)\dagger} \partial_M \hat{\Phi}^{(n)} - \left(m^2 + \frac{n^2}{R^2} \right) \hat{\Phi}^{(n)\dagger} \hat{\Phi}^{(n)} + \cdots \right]$$