

Application of the Ryu-Takayanagi minimal area formula to a dual Einstein-Maxwell-dilaton theory yields

$$S_E \sim \begin{cases} P & , \quad \text{for } \theta < d - 1 \\ P \ln P & , \quad \text{for } \theta = d - 1 \\ P^{\theta/(d-1)} & , \quad \text{for } \theta > d - 1 \end{cases} .$$

The non-Fermi liquid has log-violation of “area law”, and this appears precisely at the correct value  $\theta = d - 1$ !

Moreover, the co-efficient of  $P \ln P$  computed holographically is independent of the shape of the entangling region just as expected for a circular Fermi surface!!