

Recently, geometrically singular entangling regions in the shape of corners or cones have become very important, since they introduce new universal terms in "Entanglement Entropy". Hence, It seems to be interesting to study the effects of these geometrical singularities on other measures of "Quantum Entanglement", such as "Mutual Information" and "n-partite Information".

In this talk, I will report our recent results for "Holographic Mutual Information" (HMI), and "Holographic n-partite information" in the presence of these singular surfaces.

First, I will talk about the general behavior of HMI and n-partite information for a configuration in which the entangling regions are sectors of a circle, in an arbitrary dimensional Conformal Field Theory (CFT). We showed that the HMI is a UV-divergent quantity and it shows a first order phase transition. Moreover, the holographic tripartite information is UV-divergent for disjoint sectors. It is in contrast with the well-known feature of tripartite information, which is usually finite, even when the entangling regions have a common boundary.

Next, I will explain the effect of having a common boundary on HMI. We saw that for a configuration in which the entangling regions are separated by a sharp annular region, the HMI is independent of the UV cut off.

This talk is mainly based on "arXiv: [1511.00244](https://arxiv.org/abs/1511.00244) [hep-th]".