Institut Henri Poincaré

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String Theory in Greater Paris

Rencontres Théoriciennes

“Supergravité, théorie des cordes et théorie M”

Jeudi 15 Novembre 2018, 10:00

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Wilson Surface Central Charge

M-theory is currently our best candidate for a theory of everything, but remains mysterious. We know M-theory has M2- and M5-branes. The low-energy theory on a stack of coincident M2-branes is well-understood : it is maximally supersymmetric Chern-Simons-matter theory. However, the low-energy theory on a stack of coincident M5-branes remains poorly-understood : it is a maximally supersymmetric theory of self-dual strings with zero tension. In this talk I will discuss one type of probe of the M5-brane theory, namely self-dual strings with infinite tension. These play a role analogous to Wilson lines in gauge theories, but are two-dimensional surfaces rather than lines, and hence are called Wilson surfaces. I will describe holographic calculations of entanglement entropy associated with these infinite-tension self-dual strings, from which we extract a key parameter characterizing them, their central charge. This provides a count of the number of massless degrees of freedom living on them, and thus may shed light on some of the fundamental degrees of freedom of M-theory.

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