

Abstract Submitted
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Edge theory approach to topological entanglement entropy and other entanglement measures of (2+1) dimensional Chern-Simons theories on a general manifold XUEDA WEN, Physics Department, UIUC, SHUNJI MATSUURA, Niels Bohr Institute, University of Copenhagen Yukawa Institute for Theoretical Physics, Kyoto University, SHINSEI RYU, Physics Department, UIUC — Topological entanglement entropy of (2+1) dimensional Chern-Simons gauge theories on a general manifold is usually calculated with Wittens method of surgeries and replica trick, in which the spacetime manifold under consideration is very complicated. In this work, we develop an edge theory approach, which greatly simplifies the calculation of topological entanglement entropy of a Chern-Simons theory. Our approach applies to a general manifold with arbitrary genus. The effect of braiding and fusion of Wilson lines can be straightforwardly calculated within our framework. In addition, our method can be generalized to the study of other entanglement measures such as mutual information and entanglement negativity of a topological quantum field theory on a general manifold.

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