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Mutual information and compactification radius in a c=1 critical phase in one dimension SHUNSUKE FURUKAWA, RIKEN, VINCENT PASQUIER, Institut de Physique Theorique, CEA Saclay, JUN'ICHI SHIRAISHI, Graduate School of Mathematical Science, University of Tokyo — We investigate the generic scaling of the mutual information in a class of one-dimensional quantum critical systems described by a bosonic field theory with a central charge $c = 1$. A numerical analysis of a spin-chain model reveals that the mutual information is scale-invariant and depends on the compactification radius (or the Tomonaga-Luttinger parameter) of the bosonic field, as opposed to the general prediction of Calabrese and Cardy. Interpretations of the results are given in terms of branch-point twist fields. The present study provides a new way to determine the compactification radius, and furthermore demonstrates the ability of the mutual information to distinguish different conformal field theories with the same central charge.

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