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Generalized gauge actions, KMS states, and Hausdorff dimension for higher-rank graphs

Inspired by work of McNamara, Exel-Laca, and Ionescu-Kumjian, we study generalized gauge actions for strongly connected higher-rank graphs (k-graphs). In our setting the generalized gauge action arises from a weight functor on the k-graph Λ combined with a real parameter β . We show that the same data also gives rise to a metric on the infinite path space Λ^∞ of our k-graph, and that the Hausdorff measure of the associated metric space is intimately related to the KMS states for the original generalized gauge action. This is joint work in progress with Carla Farsi, Sooran Kang, Nadia Larsen, and Judy Packer.