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Entanglement Entropy at Generalized RK Points of Quantum Dimer Models[1] ALEXANDER SELEM, University of California, Berkeley, CHRISTOPHER HERDMAN, University of Vermont, K. BIRGITTA WHALEY, University of California, Berkeley — We study the $n = 2$ Rényi entanglement entropy of the triangular quantum dimer model via Monte Carlo sampling of Rokhsar-Kivelson(RK)-like ground state wavefunctions. Using the construction proposed by Kitaev and Preskill [Phys. Rev. Lett. 96, 110404 (2006)] and an adaptation of the Monte Carlo algorithm described in [Phys. Rev. Lett. 104, 157201 (2010)], we compute the topological entanglement entropy (TEE) at the RK point $\gamma = (1.001 \pm .003) \ln 2$ confirming earlier results. Additionally, we compute the TEE of the ground state of a generalized RK-like Hamiltonian and demonstrate the universality of TEE over a wide range of parameter values within a topologically ordered phase approaching a quantum phase transition. For systems sizes that are accessible numerically, we find that the quantization of TEE depends sensitively on correlations. We characterize corner contributions to the entanglement entropy and show that these are well described by shifts proportional to the number and types of corners in the bipartition.

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