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Devil's staircase in a quantum dimer model on the hexagonal lattice THOMAS BARTHEL, Duke University, Department of Physics, GRÉGOIRE MISGUICH, CEA Saclay, Institut de Physique Théorique, THIAGO M. SCHLITTLER, JULIEN VIDAL, RÉMY MOSSERI, Université Paris 6, LPTMC — Quantum dimer models appear in different contexts when describing dynamics in constrained low-energy manifolds, such as for frustrated Ising models in weak transverse fields. In this talk, I address a particularly interesting case, where a quantum dimer model on the hexagonal lattice, in addition to the standard Rokhsar-Kivelson Hamiltonian, includes a competing potential term, counting dimer-free hexagons. It has a rich zero-temperature phase diagram that comprises a cascade of rapidly changing flux quantum numbers (tilt in the height language). This cascade is partially of fractal nature and the model provides, in particular, a microscopic realization of the "devil's staircase" scenario [E. Fradkin *et al.* Phys. Rev. B **69**, 224415 (2004)]. We have studied the system by means of quantum Monte-Carlo simulations and the results can be explained using perturbation theory, RG, and variational arguments. References: arXiv:1507.04643, arXiv:1501.02242.

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