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Arnol'd cat lattice field theories as probes and frameworks for quantum effects in curved spacetime

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Arnol'd cat maps describe accelerating observers that probe the near horizon geometry of extremal black holes, when the microstates can be resolved. As single particle probes, they display the requisite properties of fast scrambling, that is the hallmark of consistent information processing in black hole spacetimes and they satisfy the non-trivial requirements of eigenstate thermalization.

Recently a construction of coupled Arnol'd cat maps has been proposed. This leads to the definition of lattice field theories that do not possess an integrable limit, but can be completely solved. We review the construction, that is relevant for multiparticle probes of the near horizon geometry, as well as for providing a framework for describing the geometry itself.

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