Quantum Game of Life[1] AARON GLICK, LINCOLN CARR, Colorado School of Mines, TOMMASO CALARCO, SIMONE MONTANGERO, University of Ulm — In order to investigate the emergence of complexity in quantum systems, we present a quantum game of life, inspired by Conway's classic game of life. Through Matrix Product State (MPS) calculations, we simulate the evolution of quantum systems, dictated by a Hamiltonian that defines the rules of our quantum game. We analyze the system through a number of measures which elicit the emergence of complexity in terms of spatial organization, system dynamics, and non-local mutual information within the network.

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