

Probing Conformal Boundary/Defect and Spin Liquid through “Snapshots”

Snapshots are the standard data produced in many quantum simulators. In this talk we demonstrate that they encode far more information than conventional correlation functions. I'll show how snapshot data can probe conformal boundaries and defects in quantum many-body systems. In particular, from local-spin snapshots we can extract the universal conformal defect (boundary) entropy of the Ising CFT, as well as the “line of defect fixed points”. The protocol extends naturally to higher-dimensional CFTs. I'll then discuss a construction of a strongly interacting spin-liquid wave function using free or weakly interacting fermions available on current simulators, and I'll share preliminary results applying our proposal to real experimental data.

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