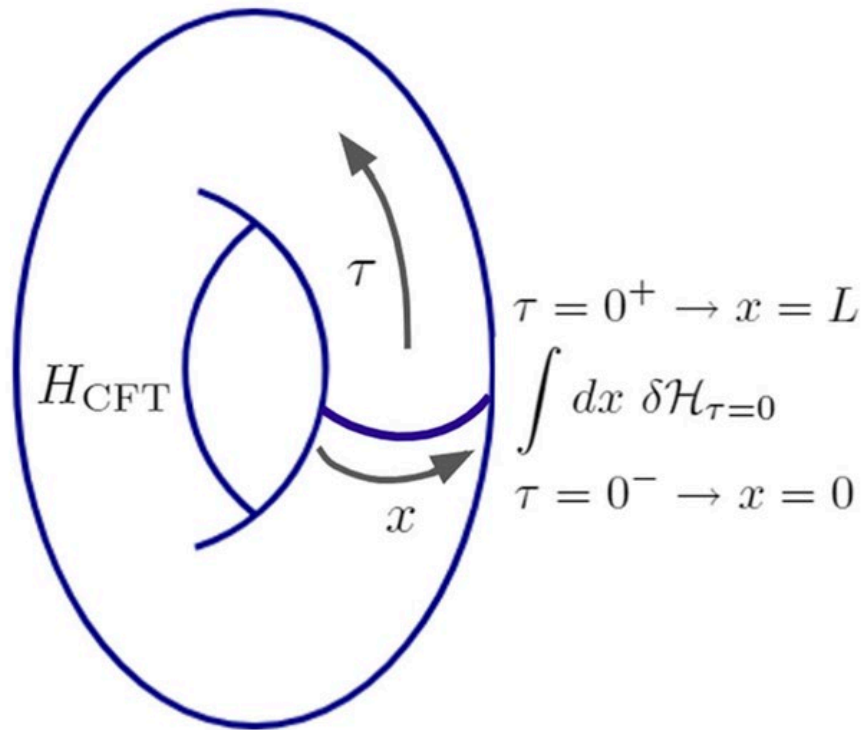


Probing Defects with Quantum Simulator Snapshots



Measurement-induced temporal defect whose properties can be simulated with snapshot data

Scientific Achievement

Developed and validated a protocol for simulating defect physics using local measurement snapshots

Significance and Impact

The technique applies broadly to quantum simulators and enables detailed exploration of measurement-altered quantum states

Research Details

- Methods were developed in the context of spin systems and Rydberg atom arrays
- Validation was conducted through detailed simulations
- Required snapshot sample sizes were quantitatively analyzed

A. Sarma, N. Myerson-Jain, Y. Liu, N. Manoj, J. Alicea, R. G. Melko, and C. Xu,
Phys. Rev. Lett. **136**, 020603 (2026). DOI: <https://doi.org/10.1103/stk3-lm78>

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- **NQISRC Intellectual Role:** *[Minor]*
- **NQISRC Funding Role:** *[Minority]*
- **Explanation of Funding Institution Contributions**
 - *The DOE Quantum Science Center supported the Caltech researchers for the sample complexity analysis of this work.*
 - *Researchers from UCSB and Perimeter Institute were funded by other sources, enabling mutually beneficial advances not possible with QSC funds alone.*