## 1. LALA

- GLM08b speculate *passive* compnenents to enact the memory, such that after a signal is sent into the device, it *propagates without external control to complete the memory access*.
- Results on QRAM are scattered.
- Classically we are used to "gates" being static physical components that data propagates through, just as depicted in circuit diagrams. Applying that intuition to quantum computing is unjustified.
- In contrast, the memory peripheral framework of JS19 models quantum computer as data are static physical components, and gates are operations that a controller applies to the data.
- In this framework a quantum computer is a physical object (e.g., some Hilbert space) called a *memory peripheral* that evolves independently under som Hamiltonian.
- There is also a memory controller that can choose to intervene on the object, either by applying a quantum channel from some defined set, or modifying the Hamilton.
- The crux of QRAM is that if a query state is a superposition over all addresses, then for the device or circuit to respond appropriately, it must perform a memory access over *all* addresses simultaneously.
- imagining the memory laid out in space, a QRAM access must transfer some information to each of the bits in memory if it hopes to correctly perform a superposition of memory accesses.
- This sets up an immediate contrast to classical memory, which can instead adaptively direct a signal through different parts of a memory circuit.