

Abstract Submitted
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Dispersive readout of spin blockade in a carbon nanotube double quantum dot HUGH CHURCHILL, RUBY LAI, CHARLES MARCUS, Harvard University — We probe the charge states of a carbon nanotube double quantum dot by coupling superconducting resonators to the leads and a gate of a device designed for operation as a spin-valley qubit. Multiplexed dispersive readout allows rapid reflectometry measurements of the device without the need for dedicated proximal charge sensors. In this way as-grown nanotubes may be used in a bottom-gated geometry to create low-disorder devices that are freely suspended and then insulated using atomic layer deposition. These techniques are demonstrated with measurements in the spin blockade regime. We acknowledge support from IBM, NSF-MWN, NSF-NRI through the INDEX Center, and Harvard University.

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