Double Quantum with Floquet Dynamics

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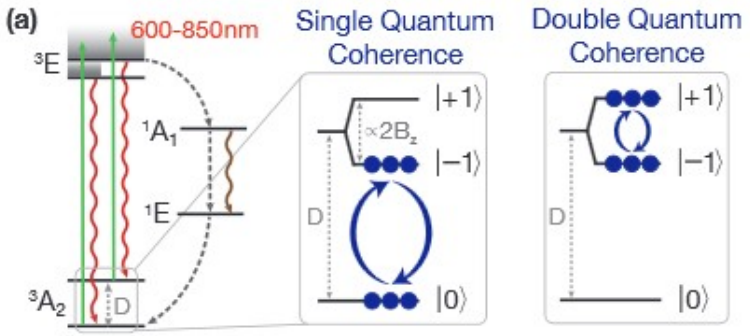
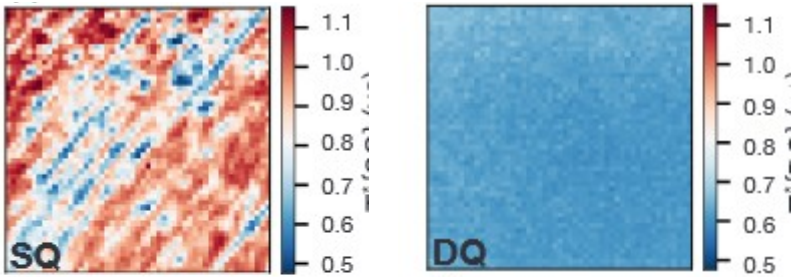
About Double Quantum

- Goal: Create and readout double quantum state (e.g arXiv:2009.02371)

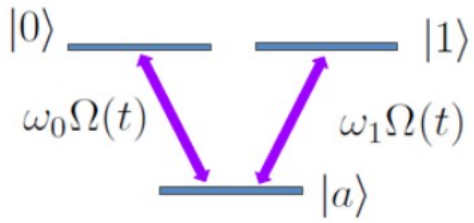


- Application: Remove strain inhomogeneity

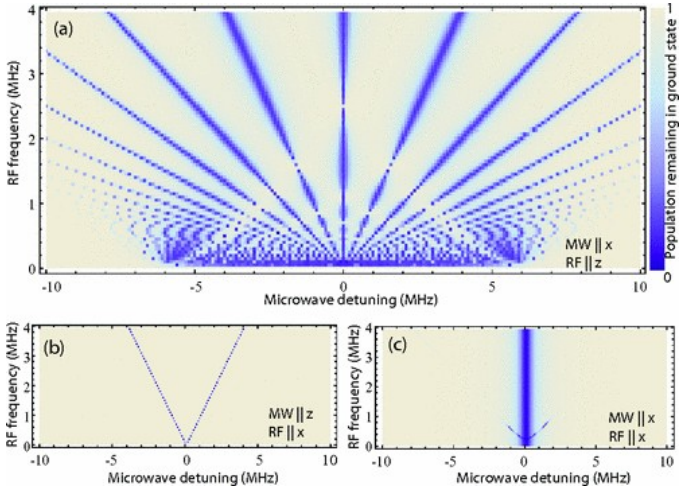


How to Double Quantum

- Two MW frequency drive (e.g. Farida thesis 2019)



- Floquet driven system? (e.g. Childress 2010)

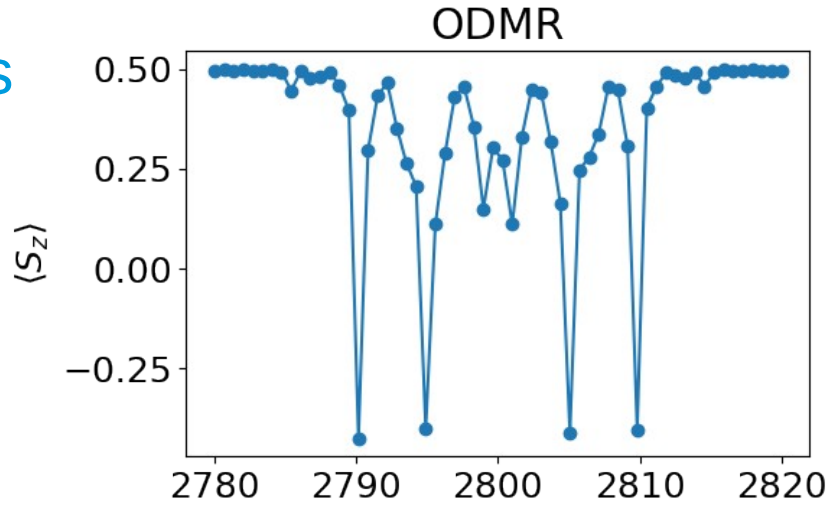


Simulations – Floquet Dynamics

- Hamiltonian

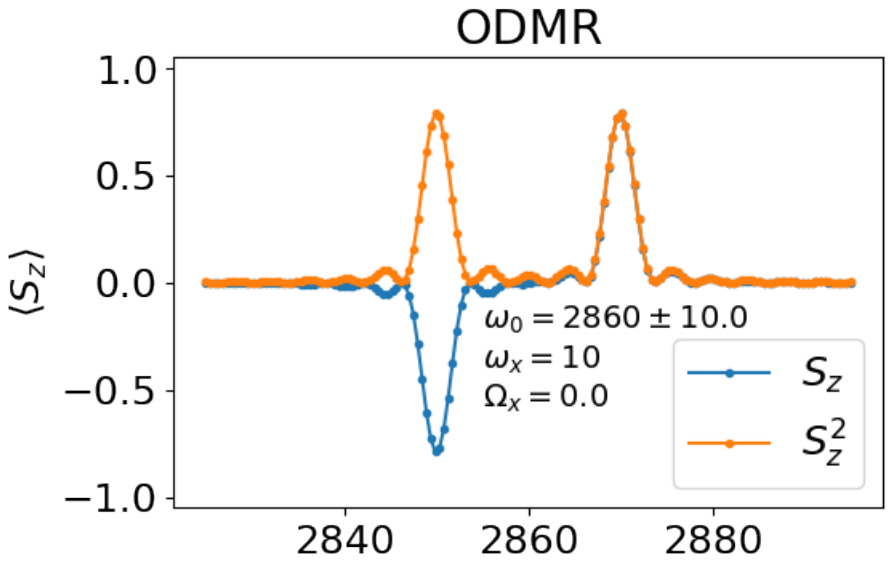
$$H = \omega_s S_z + \Omega_{\mathrm{rf}} \sin(\omega_{\mathrm{rf}} t) S_z + \Omega_{\mathrm{probe}} \sin(\omega_{\mathrm{probe}} t) S_x$$

- ODMR of Floquet → Sidebands
- Double Quantum?



Simulations – Floquet and Double Quantum

- Overlapping two sidebands → Transition from 0 → +-1



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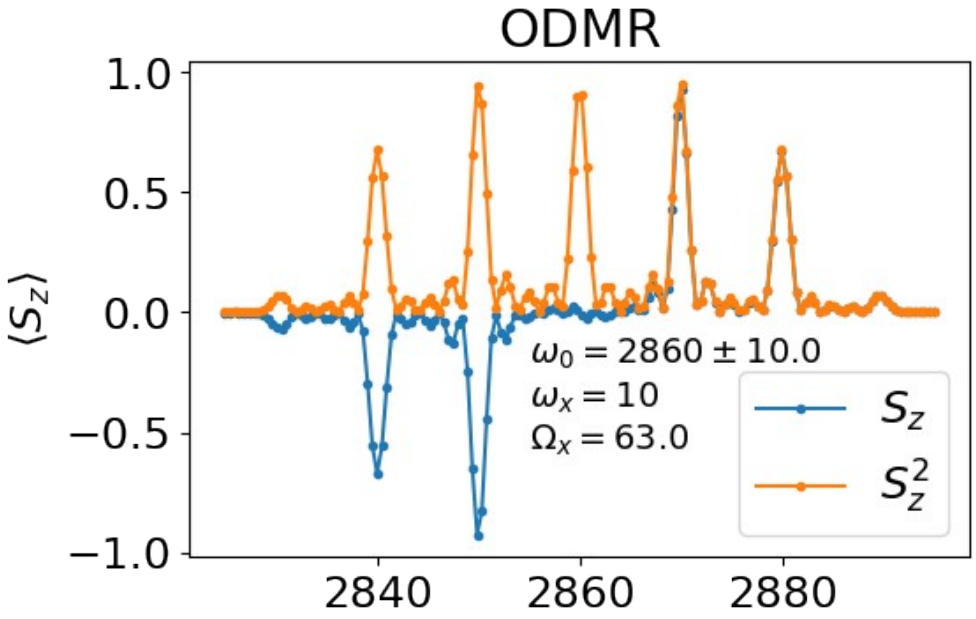
  - Floquet can help create DQ-states
  - Possible at small magn. fields



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