Exact, Floquet-based, Single Qubit Control\textsuperscript{1} ANDREW SORN-BORGER, University of Georgia, EMILY PRITCHETT, Institute for Quantum Computing — Single-qubit gate design using oscillatory controls is related to the Rabi problem of rotating a spin. In the classical solution one drives the spin with an oscillatory electromagnetic field orthogonal to a background field. Here, we introduce a new, general method for constructing continuous, oscillatory quantum controls based on Floquet’s theorem. We then derive a family of exact, analytical solutions to the generalized Rabi problem of completely controlling a single-qubit in a fixed background field.

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