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## Documents

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**Haar wavelet spectrum of a pulsed-driven qubit**

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**Abstract**

The transient fluorescent spectrum of a non-dissipative single 2-level atom driven by a resonant rectangular pulse is investigated analytically and computationally with the Haar wavelet window function. The shift parameter ( $k$ ) of the mother wavelet function induces periodic effect. For weak pulse, a central dip structure -characteristic of the window transmission lines- occurs in the spectrum. With initial atomic coherent state and for strong pulse and large ( $k$ ), interference of the strong Rabi oscillations induces asymmetrical dense 'ringing' around the two Rabi side bands of the spectrum. © 2011 Old City Publishing, Inc.

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