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Landau-Zener extension of the Tavis-Cummings model: structure of the solution[1] CHEN SUN, Texas A&M University, NIKOLAI SINITSYN, Los Alamos National Laboratory — We explore the recently discovered solution of the driven Tavis-Cummings model (DTCM). It describes interaction of arbitrary number of two-level systems with a bosonic mode that has linearly time-dependent frequency. We derive compact and tractable expressions for transition probabilities in terms of the well known special functions. In the new form, our formulas are suitable for fast numerical calculations and analytical approximations. As an application, we obtain the semiclassical limit of the exact solution and compare it to prior approximations. We also reveal connection between DTCM and q-deformed binomial statistics.

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