The effect of a slow noise in non-diagonal matrix element, \( J(t) \), that describes the diabatic level coupling, on the probability of the Landau-Zener transition is studied. For slow noise, the correlation time, \( \tau_c \), of \( J(t) \) is much longer than the characteristic time of the transition. Existing theory for this case suggests that the average transition probability is the result of averaging of the conventional Landau-Zener probability, calculated for a given constant \( J \), over the distribution of \( J \). We calculate a finite-\( \tau_c \) correction to this classical result. Our main finding is that this correction is dominated by sparse realizations of noise for which \( J(t) \) passes through zero within a narrow time interval near the level crossing. Two models of noise, random telegraph noise and gaussian noise, are considered. Naturally, in both models the average probability of transition decreases upon decreasing \( \tau_c \). For gaussian noise we identify two domains of this fall-off with specific dependencies of average transition probability on \( \tau_c \).


Tuesday, April 25
4:00 pm
Room 334 JFB