

Landau-Zener model

Within the Born-Oppenheimer approximation, a semi-classical model for the probability, P , of hopping from one electronic state to another of the same or different *multiplicity*

$$P = \exp[-(4\pi^2 \varepsilon_{12}^2) / h\nu |s_1 - s_2|]$$

where ε_{12} is the potential energy gap between the two electronic states at a surface crossing point, $|s_1 - s_2|$ is the difference in slopes between the intersecting potential energy curves at this point and ν is the nuclear relative velocity with which the system passes the point of closest approach.

Note: The original formalism only considered states of the same spin multiplicity.

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