

Title: **Quantum tunneling in chemistry**

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Over the last years, many studies show that the influence of tunneling in chemical reactivity is more important than previously considered. The role that tunneling can play has been observed with experimental techniques in kinetic studies, being the dependence of the reaction rate constant with temperature and kinetic isotope effects the most used. At theoretical level, there exist some computational methods to determine the contribution of tunneling to the chemical reactivity. Variational transition state theory (VTST), with tunneling approximations, is widely used in order to do this calculations. In this project, will be interesting to perform a detailed analysis of the influence of tunneling in chemical reactivity considering the most recent progresses in the experimental and theoretical studies.

Keywords: Quantum mechanical tunneling, chemical reactivity, kinetic studies, variational transition state theory.