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**Tunneling of a composite particle on a  
one-dimensional lattice**

Most of the time, quantum tunneling is studied for point-like, elementary particles. In reality, however, the tunneling object is often a composite, with an inner structure. This raises several questions: How does the composite nature of a particle affect its tunneling? Under which conditions does the compound tunnel as a single object rather than as the sum of its constituents? Here, we study the dynamics of a two-particle compound on a one-dimensional lattice --- a simple model to describe tunneling of a quantum object in a periodic potential, such as in a crystal or an optical lattice. In particular, we focus on the scattering of the compound by an impurity in the lattice. With the help of degenerate perturbation theory, we derive an effective Hamiltonian for the compound. We then discuss the validity of this approximation by comparing its predictions with numerically exact simulations of the scattering process.

The event will take place in Zoom.

Join Zoom Meeting

<https://uni-freiburg.zoom.us/j/67154540580>

Meeting ID: 671 5454 0580

Passcode: i9a0Am3hS