# Quantum Dynamics for General Time-Dependent Three Coupled Oscillators

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**Abstract :** The dynamic of time-dependent three coupled oscillators is studied through an approach based on decoupling of them using the unitary transformation method. From a first unitary transformation, the Hamiltonian of the complicated original system is transformed to an equal but a simple one associated with the three coupled oscillators of which masses are unity. Finally, we diagonalize the matrix representation of the transformed hamiltonian by using a unitary matrix. The diagonalized Hamiltonian is just the same as the Hamiltonian of three simple oscillators. Through these procedures, the coupled oscillatory subsystems are completely decoupled. From this uncouplement, we can develop complete dynamics of the whole system in an easy way by just examining each oscillator independently. Such a development of the mechanical theory can be done regardless of the complication of the parameters' variations.

**Keywords :** schrödinger equation, hamiltonian, time-dependent three coupled oscillators, unitary transformation
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