

## CHAPTER OVERVIEW

### 14: Time-dependent Quantum Dynamics

The interaction of a molecular species with electromagnetic fields can cause transitions to occur among the available molecular energy levels (electronic, vibrational, rotational, and nuclear spin). Collisions among molecular species likewise can cause transitions to occur. Time-dependent perturbation theory and the methods of molecular dynamics can be employed to treat such transitions.

[14.1: Time-Dependent Vector Potentials](#)

[14.2: Time-Dependent Perturbation Theory](#)

[14.3: Application to Electromagnetic Perturbations](#)

[14.4: The "Long-Wavelength" Approximation](#)

[14.5: The Kinetics of Photon Absorption and Emission](#)

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