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3: Time-Evolution Operator

\[ |\ell\rangle \quad \text{Arrows} \quad |k\rangle \]

- 4: Irreversible Relaxation

- 5: The Density Matrix

- 6: Adiabatic Approximation

- 7: Interaction of Light and Matter
8: Mixed States and the Density Matrix

\[ A_i(t) \]
\[ \langle A \rangle \]
\[ \text{time, } t \]

9: Irreversible and Random Processes

- 10: Time-Correlation Functions

- 11: Linear Response Theory
12: Time-domain Description of Spectroscopy

13: Coupling of Electronic and Nuclear Motion

14: Fluctuations in Spectroscopy

15: Energy and Charge Transfer
16: Quantum Relaxation Processes

• Back Matter