

# Advanced Quantum Mechanics: Lecture 2

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# Overview

- ① Time Evolution and the Schrödinger Equation
  - Time Evolution Operator
  - Energy Eigenkets
  - Time Dependence of Expectation Values
- ② Correlation Amplitude and the Energy-Time Uncertainty Relation
- ③ The Schrödinger Versus the Heisenberg Picture
  - Unitary Operators
  - The Heisenberg Equation of Motion
- ④ Construction of the path integral
  - Analytic continuation to imaginary time
- ⑤ The WKB Approximation
- ⑥ Potentials and Gauge Transformations

# Time Evolution