1. Quantum State Vectors
   1. Kets - 
   2. Bras - 
2. Superposition
   1. 
   2. 
3. Inner Products:
   1. , normalized
   2. orthogonal
   3. 
   4. Probability amplitude that a particle in state can be found in state .
   5. Probability that a particle in state can be found in state .
4. States in -basis
   1. , 
   2. , 
5. General States
   1. , 
   2. 
   3. Expectation value: 
   4. Uncertainty: 
6. Matrix Representations of States in -basis
   1. 
   2. , 
   3. 
   4. , 
   5. , 
   6. , 
7. Rotations
   1. 
   2. 
   3. , 
8. Projections
   1. , ,
   2. , Completeness
   3. 
9. Eigenvalues
   1. 
10. Matrix Representations of Operators, 
    1. 
    2. 
    3. , 
    4. 
11. Change of Basis
    1. 
    2. , where 
12. Matrix/Operator Types
    1. Adjoint ,
    2. Unitary ,
    3. Hermitian 

Other Topics for Exam

1. Stern-Gerlach Devices – Behaviors of SGz, SGx, SGy, modified devices
2. Normalization of bras and kets
3. Probabilities, expectation values, uncertainties
4. Use of completeness relation for identity operator
5. Representation of states and operators in different bases
6. Definition/recognition of different operators/matrices – unitary, Hermitian, etc
7. Rotation, generator, projection operators
8. Composition of operators, products of matrices
9. Change of basis for ket and operator matrix representations