

Group Theory in Physics

1. Elements of Group Theory

- (a) Definition of Group,
- (b) Rearrangement theorem,
- (c) Coset

2. Theory of Representation

- (a) Irreducible Representation
- (b) Great Orthogonality Theorem
- (c) Decomposition of Reducible Rep
- (d) Regular Representation
- (e) Character Table

3. Infinite Group

- (a) Group Integration & Group invariant measure
- (b) SO (2) group
- (c) SU (2)

4. Rotation Group O(3)

- (a) Homomorphism to SU(2) Group
- (b) Irreducible representations
- (c) Clebsch-Gordon Coefficients
- (d) Wigner-Eckart Theorem

5. Algebraic approach

- (a) SU(n) Algebra
- (b) SU(2) Algebra & Representation
- (c) SU(3) Algebra & Representation