Pofessor David Schmeltzer-V2500 TuTh 10-11:40

Syllabus-Quantaum MechanicsI

1.)Matemtical Introduction

(Basis,

Expansion of the vector using the vector basis.

Scalar product.

,Norm $(< v|v >)^{0.5}$

, Ortonormal basis $< e_i|e_j >= \delta_{i,j}$

,$|v >= \sum_i |e_i > v_i; < v|u >= \sum_i v_i u_i$

,Matrix, Eigenvalues

2.)The x and p representation of operators.

3)The postulate of Quantum Mechanics.

4)Simple problems in one dimension.

5)The classical limit.

6.)The Harmonic oscillator.

7.)The path integral formulation.

9.)The Heisenberg uncertainty relation.

10) System with N degrees of .

11)Smmetry and the consequenses.

12)The angular momentum.

13)The Hydrogen atom.

14)Spin.

15)Addition of angular momentum.

16)Variational and WKB methods.

17)Time independent peturbation theory.

18) Time-dependent perturbation theory.

19)Scattering theory.

20)The Dirac theory.