

The Postulates of Quantum Mechanics Phys 401

- 0 The state of a physical system is completely described by its wavefunction Ψ , or state-vector ket $|\Psi\rangle$.
 - a. There are no “hidden variables”
 - b. There is no underlying trajectory – beware of ‘pictures’
- 1 Every measurable physical quantity is described by a corresponding Hermitian operator acting on the wavefunction.
- 2 The only possible result of a measurement of a dynamical variable is one of the eigenvalues of the corresponding operator. $L_{op}\Psi_n = \ell_n\Psi_n$ (where Ψ_n is an eigenfunction of the operator L_{op}).
- 3 Any acceptable wavefunction Ψ can be expressed in a series of all of the eigenfunctions ψ_n of any observable operator L_{op} ($L_{op}\psi_n = \ell_n\psi_n$) as,
$$\Psi = \sum_n c_n\psi_n$$
- 4 The state of a system immediately after measurement is an eigenvector of the operator associated with the measured eigenvalue.