QM

Uncertainty principle $\implies$ limit DNE $\implies$ no classical velocity

Superposition: existence of "wave function", interpretation of $|\Psi|^2 dq$. Measurement function / operators must be bilinear in Ψ and Ψ^*. Most general form is $\int \Psi\Psi^*\phi dq$

$\Psi(1)$ result 1, $\Psi(2)$ result 2, linear combination either result 1 or result 2. All linear combinations valid.

Linear combination of eigenfunctions = wavefunction. Complete set. Bilinear in Ψ and Ψ^* hence in a_n and a_n^*, positive $\implies$ squared modulus of a_n.

Can derive [23] that $a_n = \int \Psi\Psi_n^* dq$, $\int \Psi_n\Psi_m^* dq = \delta_{nm}$