2.5   Measuring quantum mechanical properties

Let the system be in a state ψ which is not an Eigenstate of the operator A.
The expectation value has according to axiom 4 no sharp value, i.e. each Eigenvalue of A may occur when performing a measurement.

Measuring means

to create conditions under which the system has to decide which of the possible sharp values a of the operator A is found.

A good Measurement

only filters out one special Eigenvalue a_k out of a mixture of the Eigenstates of the operator A. The probability to find a_k is $c_k^* c_k$.

A bad Measurement

changes the Hamiltonian of the system.

Measuring implies

to change the state.

"It is impossible *just* to look at a quantum mechanical particle!"

Measuring should be understood as

- the projection of a state into the system of Eigenvectors of an operator + decision in favor of one component.