

Schwartz 8.1

Consider wave function  $\Psi$ , we have

$$\frac{\sum_k \langle \Psi, \psi_k \rangle}{\sum_k \langle \Psi, \psi_k \rangle} = 1$$

where  $\{\psi_k\}$  is a complete, orthogonal, set of eigenstates.

The probabilistic interpretation gives the probability for  $\Psi$  to not collapse to  $\psi_m$  as

$$\frac{\sum_{k \neq m} \langle \Psi, \psi_k \rangle}{\sum_k \langle \Psi, \psi_k \rangle} = 1 - \frac{\langle \Psi, \psi_m \rangle}{\sum_k \langle \Psi, \psi_k \rangle}$$

if  $\langle \Psi, \psi_m \rangle < 0$ , then this probability  $> 1$ .

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