

$$\begin{array}{l} S\in \\ R^3 \\ x,S_y,S_z) \\ S_{x_i} \\ \hat{x}_i \end{array}$$

$$\begin{array}{l} S \\ R^3 \\ _n(S)= \\ \dot{S} \\ \dot{S}_n \\ \dot{S}_n \\ R^3 \\ \dot{S}_n \\ S_n \\ S_n \\ S \end{array}$$

$$\begin{array}{l} \hat{n} \\ m \\ com- \\ pat- \\ i- \\ ble \\ S_n \\ S_m \\ R^3 \\ S_n \\ S_n \\ S_n \\ S_n \\ S_n \\ quan- \\ tized \\ S_n \\ S^x \\ S^z \\ \hat{n} \\ m \\ S_n \\ S_m \\ m \\ com- \\ pat- \\ i- \\ ble \\ S_n \\ S_n \\ S_m \\ \psi \\ \mathcal{H} \\ \frac{1}{2} \end{array}$$

$$\begin{array}{l} \mathcal{H}=\{\alpha++\beta-\} \\ (1) \end{array}$$

$$\begin{array}{l} \alpha,\beta\in \\ C \\ \mathcal{H} \end{array}$$

$$\begin{array}{l} \psi \\ S \\ A \\ A \\ \mathcal{H} \\ A \\ A \\ S_z \end{array}$$

$$\begin{array}{l} \dot{=} \\ \frac{\hbar}{2}10 \\ 0- \\ 1 \\ z \end{array}$$

$$\begin{array}{l} (S_z=\frac{\hbar}{2}) \\ \psi= \\ +_z \dot{=} \\ 0 \\ z \end{array}$$

$$\begin{array}{l} (S_z=\frac{-\hbar}{2}) \\ \psi= \\ -_z \dot{=} \\ 0 \\ 1 \end{array}$$

$$\begin{array}{l} S_y \\ S_z \dot{=} \\ \frac{\hbar}{2}0- \\ i \\ 0 \end{array}$$

$$\begin{array}{l} (S_y=\frac{\hbar}{2}) \\ \psi= \\ +_y \dot{=} \\ \frac{1}{\sqrt{2}}1 \end{array}$$