$\vec{S} \in R^3$
$\vec{S} = (S_x, S_y, S_z)$
S_{x_i}
$\hat{x}_i$
$\vec{S}$
R^3
$_n(S) =$
$\vec{S} \cdot \hat{n}$
S_n
$[\vec{S} \cdot \hat{n}$
R^3
$\hat{n}$
$\vec{S}$
S_n
S_n
$\vec{S}$
$\hat{n}$
$\hat{m}$
com-
pat-
i-
ble
S_n
S_m
R^3
S_n
S_n
S_n
S_n
S_n
quan-
tized
$\vec{S}$
S_n
S_x
$\vec{S}$
S_z
$\hat{n}$
$\hat{m}$
S_n
S_m
in-
com-
pat-
i-
ble
S_n
S_n
S_m
ψ
$\mathcal{H}$
$\frac{1}{2}$
$\psi \in \mathcal{H}\psi\{\alpha+_{S_z}+\beta-_{S_z}\}$
(1)
$\alpha, \beta \in C$
$\mathcal{H}$
ψ
S
$\mathcal{A}$
A
$\mathcal{H}$
$\mathcal{A}$
A
S_z
$_z \doteq \frac{\hbar}{2} 10$
$0-$
1
z
$(S_z = \frac{\hbar}{2})$
$\psi =$
$+_{S_z} \doteq$
1
0
z
$(S_z = \frac{-\hbar}{2})$
$\psi =$
$-_{S_z} \doteq$
0
1
z
z
S_x
S_z
$_x \doteq \frac{\hbar}{2} 01$
10
x
$(S_x = \frac{\hbar}{2})$