$$S_z = +\frac{\hbar}{2}$$

$$Z \qquad N_0/2 \qquad X \qquad S_x = +\frac{\hbar}{2}$$

$$N_0/4 \qquad Z \qquad N_0/8$$

$$S_z = -\frac{\hbar}{2} \qquad N_0/8$$