

$$\begin{aligned}
\left\langle \begin{array}{c} \mathcal{O}_1 \quad \mathcal{O}_2 \quad \dots \quad \mathcal{O}_N \\ \times \quad \times \quad \dots \quad \times \end{array} \right\rangle &= \left\langle \begin{array}{c} \boxed{\phantom{\mathcal{O}_1^g}} \quad \mathcal{O}_1 \quad \mathcal{O}_2 \quad \dots \quad \mathcal{O}_N \\ \times \quad \times \quad \dots \quad \times \end{array} \right\rangle \\
&= \left\langle \begin{array}{c} \boxed{\mathcal{O}_1^g} \quad \mathcal{O}_2 \quad \dots \quad \mathcal{O}_N \\ \times \quad \times \quad \dots \quad \times \end{array} \right\rangle \\
&= \left\langle \begin{array}{c} \boxed{\mathcal{O}_1^g \quad \mathcal{O}_2^g \quad \dots \quad \mathcal{O}_N^g} \\ \times \quad \times \quad \dots \quad \times \end{array} \right\rangle \\
&= \left\langle \begin{array}{c} \mathcal{O}_1^g \quad \mathcal{O}_2^g \quad \dots \quad \mathcal{O}_N^g \\ \times \quad \times \quad \dots \quad \times \end{array} \right\rangle
\end{aligned}$$