

$$\begin{array}{c} {}^n_4\mathbb{C}_n^\Omega \\ \uparrow \mathcal{F} \\ {}^n_2\mathbb{C}_n^\Omega \times {}^n_2\mathbb{C}_n^\Omega \\ \uparrow \mathcal{J} \\ {}^n_2\mathbb{C}_n^\Omega \end{array}$$