

$$(\underbrace{\rho_{1,1}(\textcolor{red}{1}), \rho_{1,1}(\textcolor{red}{2}), \dots, \rho_{1,1}(\textcolor{red}{k_{1,1}})}_{\text{1st block}}, \dots, \underbrace{\rho'_{i,j}(\textcolor{blue}{1})\rho'_{i,j}(\textcolor{blue}{2}), \dots, \rho'_{i,j}(\textcolor{blue}{k_{i,j}})}_{(a_1+\dots+a_{i-1}+j)\text{-th block}}, \dots, \underbrace{\rho'_{n,a_n}(\textcolor{blue}{1}), \rho'_{n,a_n}(\textcolor{blue}{2}), \dots, \rho'_{n,a_n}(\textcolor{blue}{k_{n,a_n}})}_{(a_1+\dots+a_n)\text{-th block}}))$$

$$(\dots, \underbrace{\rho_{1,1}(\textcolor{red}{1}), \rho_{1,1}(\textcolor{red}{2}), \dots, \rho_{1,1}(\textcolor{red}{k_{1,1}})}_{\tau \circ_{a_1, \dots, a_n} (\sigma_1, \sigma_2, \dots, \sigma_n)(1)\text{th block}}, \dots, \underbrace{\rho'_{n,a_n}(\textcolor{blue}{1}), \rho'_{n,a_n}(\textcolor{blue}{2}), \dots, \rho'_{n,a_n}(\textcolor{blue}{k_n}, \textcolor{blue}{a_n})}_{\tau \circ_{a_1, \dots, a_n} (\sigma_1, \sigma_2, \dots, \sigma_n)(a_1+\dots+a_n)\text{-th block}}, \dots,)$$