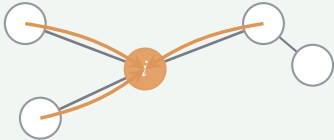
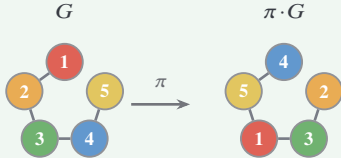


(a) Message passing



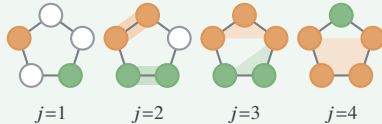
$$h_i \leftarrow \sigma\left(\sum_{j \in \mathcal{N}(i)} A_{ij} h_j W\right)$$

(b) Permutation equivariance



$$f_{\theta}(\pi \cdot G) = \pi \cdot f_{\theta}(G)$$

(c) WL expressivity



$$G \stackrel{j\text{-WL}}{\not\sim} G' \implies f_{\theta}(G) \neq f_{\theta}(G')$$