$$(v_i, e_k)$$

$$\downarrow \qquad \qquad (v_i', e_k')$$

$$\downarrow \qquad \qquad \text{Interaction network}$$

$$\downarrow \qquad \qquad \text{Edge}$$

$$\downarrow \qquad \qquad \text{block}$$

$$e_k' = \phi_2^e(e_k, v_r, v_s)$$

$$\begin{aligned}
\boldsymbol{e}_{k}' &= \phi_{2}^{e}(\boldsymbol{e}_{k}, \boldsymbol{v}_{r_{k}}, \boldsymbol{v}_{s_{k}}) \\
\boldsymbol{\bar{e}}_{i}' &= \rho^{e \to v}(E_{i})
\end{aligned} \boldsymbol{v}_{i}' = \phi_{2}^{v}(\boldsymbol{\bar{e}}_{i}', \boldsymbol{v}_{i}) \quad \boldsymbol{e}_{k}'' = \phi_{2}^{e}(\boldsymbol{e}_{k}', \boldsymbol{v}_{r_{k}}', \boldsymbol{v}_{s_{k}}')$$