$$\begin{array}{c}
\Gamma^{+}[\mathbf{v}_{k};\,\zeta_{\mathbf{v}}] \equiv \mathbf{v}_{k} \odot \exp\left(\frac{\varepsilon_{\mathbf{v}}^{k}}{2}s_{\mathbf{v}}^{k}(\zeta_{\mathbf{v}_{k}})\right) - \frac{\varepsilon_{\mathbf{v}}^{k}}{2} \left[\partial_{x}S(x_{k}) \odot \exp\left(\varepsilon_{\mathbf{v}}^{k}q_{\mathbf{v}}^{k}(\zeta_{\mathbf{v}_{k}})\right) + t_{\mathbf{v}}^{k}(\zeta_{\mathbf{v}_{k}})\right] \\
\Lambda^{+}[\bar{\mathbf{x}}_{k};\,\zeta_{\bar{\mathbf{v}}}] = \bar{\mathbf{x}}_{k} \odot \exp\left(\varepsilon_{\mathbf{v}}^{k}s_{\mathbf{v}}^{k}(\zeta_{\bar{\mathbf{v}}_{k}})\right) + \varepsilon_{\mathbf{v}}^{k}\left[v_{k}' \odot \exp\left(\varepsilon_{\mathbf{v}}^{k}q_{\mathbf{v}}^{k}(\zeta_{\bar{\mathbf{v}}_{k}})\right) + t_{\mathbf{v}}^{k}(\zeta_{\bar{\mathbf{v}}_{k}})\right]$$

force scaling

translation

 $egin{aligned} oldsymbol{\Lambda^+} \left[ar{\mathbf{x}}_k; \ oldsymbol{\zeta}_{ar{\mathbf{x}}_k}
ight] &\equiv egin{bmatrix} ar{\mathbf{x}}_k \odot \exp \left(arepsilon_{ar{\mathbf{x}}}^k oldsymbol{s}_{\mathbf{x}}^k (oldsymbol{\zeta}_{ar{\mathbf{x}}_k})
ight) \end{bmatrix} + arepsilon_{\mathbf{x}}^k \left[igg| v_k' \odot \exp \left(arepsilon_{\mathbf{x}}^k oldsymbol{q}_{\mathbf{x}}^k (oldsymbol{\zeta}_{ar{\mathbf{x}}_k})
ight) \end{bmatrix} + egin{bmatrix} ar{\mathbf{x}}_k' & oldsymbol{\zeta}_{ar{\mathbf{x}}_k} \ oldsymbol{q}_{\mathbf{x}}' & oldsymbol{\zeta}_{ar{\mathbf{x}}_k} \ oldsymbol{z}_{\mathbf{x}} \ oldsymb$

$$egin{align*} egin{align*} egin{align*}$$

v scaling