$$\Gamma^+\left[\mathbf{v}_k;\ \zeta_{\mathbf{v}}\right] \equiv \mathbf{v}_k \odot \exp\left(\frac{\varepsilon_{\mathbf{v}}^k}{2}\ s_{\mathbf{v}}^k(\zeta_{\mathbf{v}_k})\right) - \frac{\varepsilon_{\mathbf{v}}^k}{2}\left[\partial_x S(x_k) \odot \exp\left(\varepsilon_{\mathbf{v}}^k\ q_{\mathbf{v}}^k(\zeta_{\mathbf{v}_k})\right) + t_{\mathbf{v}}^k(\zeta_{\mathbf{v}_k})\right]$$

$$\Lambda^+\left[\bar{\mathbf{x}}_k;\ \zeta_{\bar{\mathbf{x}}_k}\right] \equiv \bar{\mathbf{x}}_k \odot \exp\left(\varepsilon_{\bar{\mathbf{x}}}^k\ s_{\mathbf{x}}^k(\zeta_{\bar{\mathbf{x}}_k})\right) + \varepsilon_{\mathbf{x}}^k\left[v_k' \odot \exp\left(\varepsilon_{\mathbf{x}}^k\ q_{\mathbf{x}}^k(\zeta_{\bar{\mathbf{x}}_k})\right) + t_{\mathbf{x}}^k(\zeta_{\bar{\mathbf{x}}_k})\right]$$

v scaling · force scaling · translation · trainable step sizes · **x** scaling · **v** scaling · translation