

1. Half-step full  $v$  update:

$$\diamond v'_k = \Gamma^\pm(v_k; \zeta_{v_k})$$

2. Full-step **half**  $x$  update:

$$\diamond x'_k = m^k \odot x_k + \bar{m}^k \odot \Lambda^\pm(x_k; \zeta_{x_k})$$

3. Full-step **half**  $x$  update:

$$\diamond x''_k = \bar{m}^k \odot x'_k + m^k \odot \Lambda^\pm(x'_k; \zeta_{x'_k})$$

4. Half-step full  $v$  update:

$$\diamond v''_k = \Gamma^\pm(v'_k; \zeta_{v'_k})$$