

$$\lim_{|R|\rightarrow 0} \delta S(q,R) = \int_{\mathbb{R}} \mathrm{d}\tau \left[ \lim_{R\rightarrow \infty} \int_{|t|<R} \mathrm{d}t \frac{\delta L(T_t q,t)}{\delta q(\tau)} \right] \delta q(\tau) = 0$$