$$\nabla \rho(0,t) = \nabla|_{t=0}\rho(0,t)$$

$$\rho(t) =$$

$$(\nabla \rho(t))^T = (\nabla \rho)_t^T \qquad + t^T \frac{\nabla^2|_{t=0}\rho(0,t)}{t\rho(t)}$$

$$(\nabla \rho(0,t))^T = \nabla|_{t=0} \left(\nabla|_{t=0}\rho(0,t)\right)^T \qquad \neq 0!$$

$$+ \nabla^2|_{t=0}\rho(0,t)\, t + o(t^2)$$

$$\text{cov}\left(\nabla X(t), \nabla X(t) \right)$$

$$\nabla|_{t=0}\nabla_{s=0}\rho(s,t) = \Lambda(0))$$

$$\nabla^2|_t \rho(t,t) \neq$$

$$\boxed{0 \longmapsto t_0}$$

$$\text{so} \qquad - \nabla \rho(0,t)\, \Lambda(0)\, \nabla X(0)$$

$$= \nabla|_{t=0}\rho(0,t)\, \Lambda(0)\, \nabla X(0)$$

$$+ t^T \nabla^2|_{t=0}\rho(0,t)\, \Lambda(0)\, \nabla X(0)$$

$$+ o(t)\, \nabla X(0)$$