$\mathrm{cov}(\nabla f(t)) = 0$

$\Rightarrow \mathbb{E}[\nabla^T f(t) \nabla f(t)] = 0$

$\boxed{\nabla^2 f(h,k) = h^T \nabla^2 f k.}$

$a \nabla f(t)$

$= \mathbb{E}[\ \mathrm{vech}(\nabla^T (f(t) \ldots\ ] = I$ ~~0~~

~~$\mathbb{E}[f_i'(t) f_j(t)] = 0$~~

$\frac{\partial}{\partial t_k} \mathbb{E}\left[\frac{\partial}{\partial t_i} f(t) \frac{\partial}{\partial t_j} f(t)\right] = aI.$

$= \mathbb{E}\left[\frac{\partial^2}{\partial t_i} f(t) \frac{\partial}{\partial t_j} f(t) + \frac{\partial}{\partial t_i} f(t) \frac{\partial^2}{\partial t_i \partial t_j} f(t)\right] = 0$

$\frac{\partial}{\partial t_k} = \mathbb{E}\left[\frac{\partial^2 f}{\partial t_i \partial t_k} \frac{\partial}{\partial t_j} f + \frac{\partial f}{\partial t_j} \frac{\partial^2 f}{\partial t_j \partial t_k}\right]$

Ax

$\mathbb{E}\left[\frac{\partial^2 f}{\partial t_i \partial t_k} \frac{\partial}{\partial t_j} f\right] = - \mathbb{E}\left[\frac{\partial^2 f}{\partial t_i \partial t_j} \frac{\partial}{\partial t_i} f\right].$

$\begin{pmatrix} \square & \square \end{pmatrix}$