$r(t) = 1 - t^T \Lambda t + \boxed{o(t^3)}$

$\nabla Y(t) =$

$\nabla^2 Y(t) = A^T \nabla^2 X|_{f(t)} A$

Need joint : $P_t(y, \nabla y, \nabla^2 y)$

claim: which is determined by Λ.

@ constant var

$$\begin{pmatrix} \sigma^2 & & I \\ & I & \\ I & & \blacksquare \end{pmatrix}$$

$\boxed{\mathbb{E}M = \frac{1}{4}\mathbb{E}C}$

$$\begin{matrix} \nabla y \\ \nabla^2 y \end{matrix} \sim N\left(0, \begin{pmatrix} \sigma^2 & 0 & -\Lambda \\ 0 & \Lambda & 0 \\ -\Lambda & 0 & \nabla^4 r \end{pmatrix}\right)$$

which is determined by Λ!

$\boxed{\mathrm{cov}(\nabla^2 y, \nabla^2 y)}$ $\to$ estimate this too.

$\cancel{n(n+1)}$

$\boxed{\frac{n(n-1)}{2}}$

$\mathrm{Cov}(\nabla^2 X(f(t)), \nabla^2 X(f(t)))$