so $\begin{pmatrix} f \\ \nabla^2 f \end{pmatrix}^{|\nabla f = 0} \sim N(0, J(t))$

↳ f^n of Λ, A, B

(Generalisations clear!)

note that $\mathrm{cov}(f, \nabla^2 f \mid \nabla f = 0) = \mathrm{cov}(f, \nabla^2 f)$

$= \Lambda$!

Theorem: Let X be a Gaussian random field.

Then $\mathbb{E}[M_u(T)]$

$\mathbb{E}[EC] = \sum (-1)^i \mu_i$

$= \int_T$

$\mu_i = \int_T \mathbb{E}[|\det(\cdot)| \ldots]$

$= \mu(T)\, \mathbb{E}[\det(\ldots)]$

Calc exact form of the Euler-Characteristic???

$$\boxed{\begin{aligned} &= \mathbb{E}[\det(\ldots)] \\ &= \mu_i / \mu(T)\,! \end{aligned}}$$