

$$\Rightarrow \text{LHS} = \int_T \underbrace{\sum_i (-1)^i \mathbb{E}[\text{det} \nabla^2 g(t) | -t]}_{\text{constant with } t \text{ by stationarity!}}$$

constant with t by stationarity!

as only depends on joint
distⁿ of $(g(t), \nabla^2 g(t))$!

$$\text{So} = \mu(T) \mathbb{E} \left[\sum_i (-1)^i \mathbb{E}[\text{---}] \right]$$

$$\Rightarrow \sum_i (-1)^i \mathbb{E}[\text{---}] = \frac{\text{LHS}}{P_{\text{free}}(0) \mu(T)} !$$

in particular, for a non stat field.

$$\mathbb{E} \left[\sum_i (-1)^i \mu_i \right] = \int \frac{\text{LHS}}{\mu(T) P_{\text{free}}(0)} P_{\text{free}}(t|0) dt$$

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$$= \left[\frac{1}{\mu(T)} \int \text{LHS} dt \right]$$

