

Idempotency?

$$\begin{aligned}\frac{\partial}{\partial a} \ln f_{a, \sigma^2}(\xi_1) &= \frac{(\xi_1 - a)}{\sigma^2} f_{a, \sigma^2}(\xi_1) = \frac{1}{\sqrt{2\pi\sigma}} \exp\left(-\frac{(\xi_1 - a)^2}{2\sigma^2}\right) \\ \int_{\mathbb{R}_n} T(x) \cdot \frac{\partial}{\partial \theta} f(x, \theta) dx &= M\left(T(\xi) \cdot \frac{\partial}{\partial \theta} \ln L(\xi, \theta)\right) = \int_{\mathbb{R}_n} T(x) \cdot \left(\frac{\partial}{\partial \theta} \ln L(x, \theta)\right) \cdot f(x, \theta) dx \\ \int_{\mathbb{R}_n} T(x) \cdot \left(\frac{\partial}{\partial \theta} \ln L(x, \theta)\right) \cdot f(x, \theta) dx &= \int_{\mathbb{R}_n} T(x) \cdot \left(\frac{\partial}{\partial \theta} \frac{f(x, \theta)}{f(x, \theta)}\right) \cdot f(x, \theta) dx \\ \frac{\partial}{\partial \theta} \int_{\mathbb{R}_n} T(x) f(x, \theta) dx &= \int_{\mathbb{R}_n} T(x) \cdot \left(\frac{\partial}{\partial \theta} f(x, \theta)\right) dx\end{aligned}$$

Idempotence is the property of certain operations in mathematics and computer science, that can be applied multiple times without changing the result beyond the initial application

Importance of idempotency

- Ensure nothing changes unless things need to change.
- Idempotency improves auditing and reporting change.
- Reconciliation requires idempotency.
- Idempotency improves the dry-run experience.