# Repetition week 43

<u>Invariance principle:</u>

If $\hat{\theta}$ is the MLE of $\theta$, $\tau\left(\hat{\theta}\right)$ is the MLE of $\tau(\theta)$.

<u>Bayes estimation:</u>

Prior: $\pi(\theta)$      Posterior: $\pi(\theta|x)$

$$\pi(\theta|x) = \frac{f(x,\theta)}{f(x)} = \frac{f(x|\theta)\pi(\theta)}{\int f(x,\theta)d\theta}$$

$$\hat{\theta}_B = E(\theta|x)$$

<u>The mean square error</u>

$$MSE = E\left[(W-\theta)^2\right] = Var[W] + (E[W]-\theta)^2$$