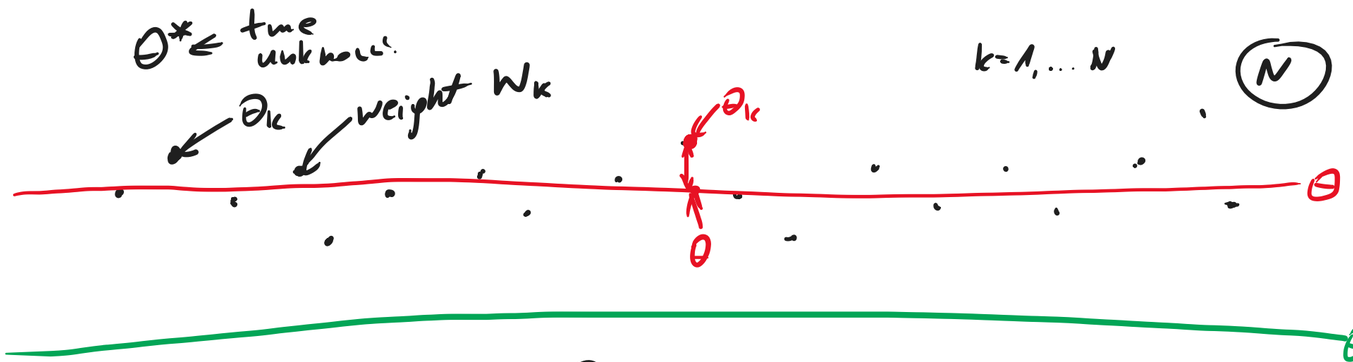

$\theta_1, \theta_2, \dots \theta_k, \dots, \theta_N$

gesucht

$$Q(\theta) = \sum_{k=1}^{N} w_k (\theta - \theta_k)^2 \longrightarrow \min_{\theta}$$

$$\frac{\partial Q(\theta)}{\partial \theta} = \sum_{k=1}^{N} 2 w_k (\theta - \theta_k) = 0 \qquad | : 2$$

$$\sum_{k=1}^{N} w_k (\theta - \theta_k) = 0$$

$$\sum_{k=1}^{N} w_k \theta = \sum_{k=1}^{N} w_k \theta_k$$

$$N\theta = \sum_{k=1}^{N} \theta_k \qquad | : N$$

$$\theta = \frac{1}{N} \sum_{k=1}^{N} \theta_k$$

special case $w_k = 1$

$$\sum_{k=1}^{N} w_k \theta = \sum_{k=1}^{N} w_k \theta_k$$

$$\theta \sum_{k=1}^{N} w_k = \sum_{k=1}^{N} w_k \theta_k$$

$$\theta = \frac{\sum_{k=1}^{N} w_k \theta_k}{\sum_{k=1}^{N} w_k}$$

$w_k = 1$

weighted mean