

# ROBISCHON

$$\begin{aligned}nV^2 &= \sum_{i=1}^n (R_i - \bar{R})^2 = \sum_{i=1}^n R_i^2 - 2\bar{R} \sum_{i=1}^n R_i + n(\bar{R})^2 \\ &= \sum_{i=1}^n R_i^2 - n(\bar{R})^2 \\ &= \sum_{i=1}^n W_i^2 - \left( \sum_{i=1}^n \frac{R_i}{\sqrt{n}} \right)^2 \\ &= \sum_{i=1}^n W_i^2 - W_1^2 \\ &= \sum_{i=2}^n W_i^2\end{aligned}$$