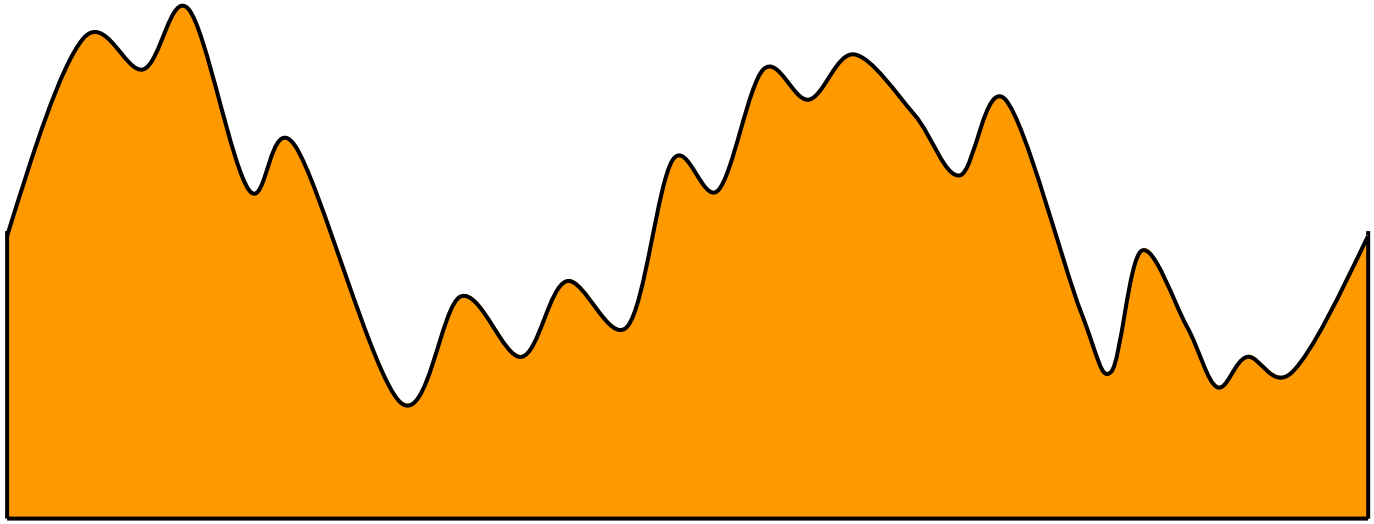
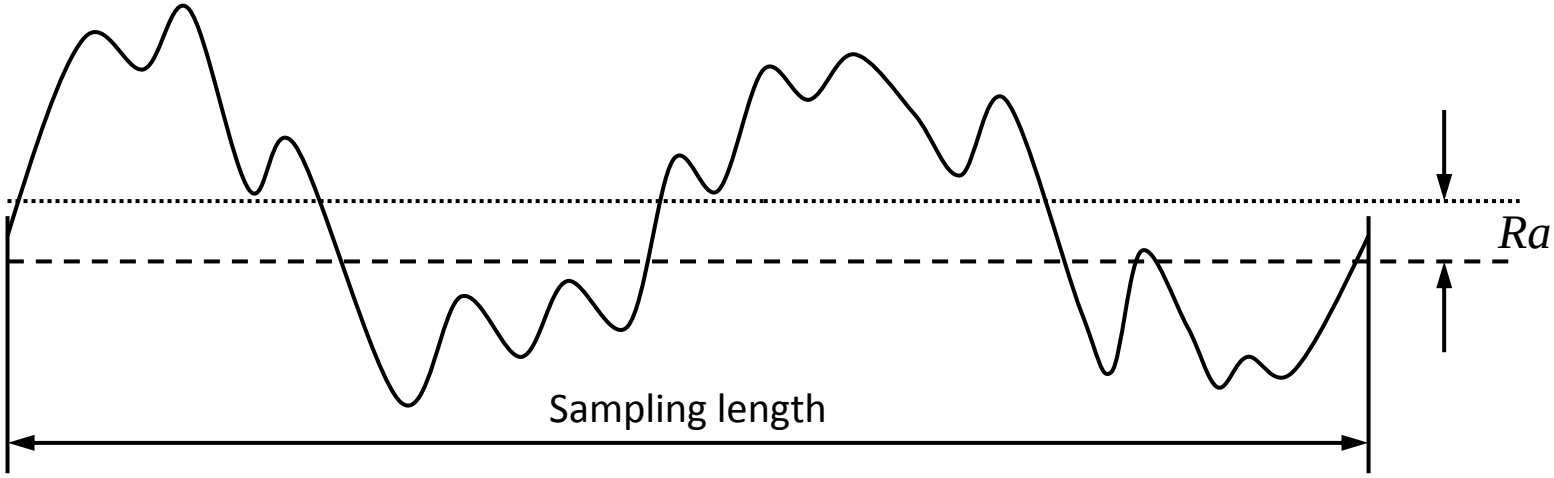
Surface roughness parameter



Surface primary profile

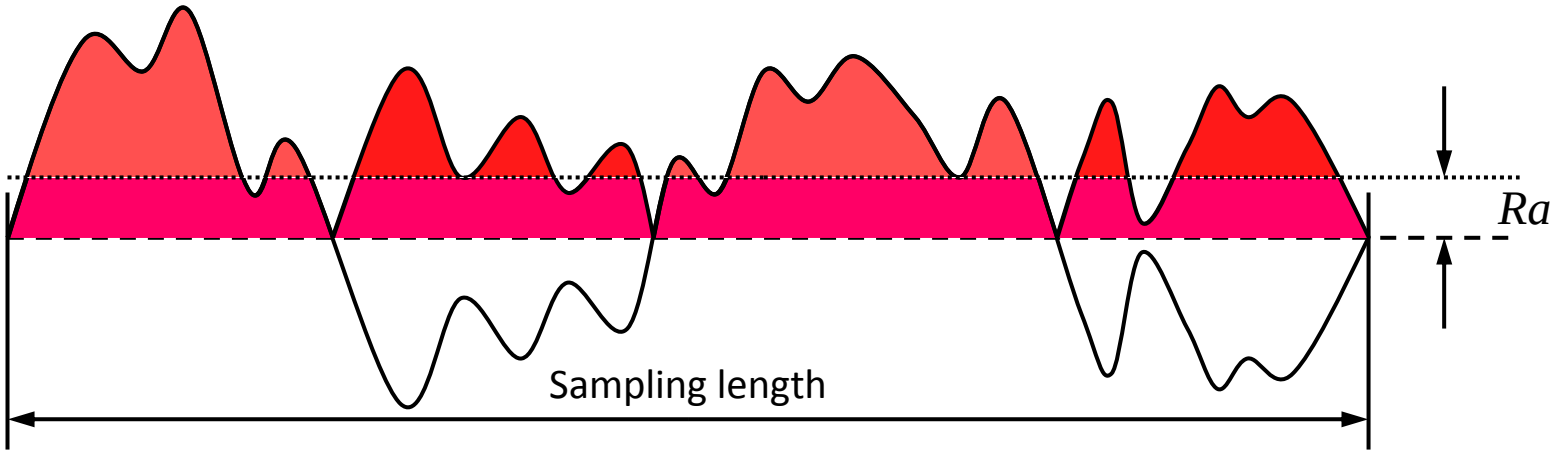


Primary profile

Mean height (Ra)

Mean height (Ra) indicates the average of the absolute value (Rn) along the sampling length.

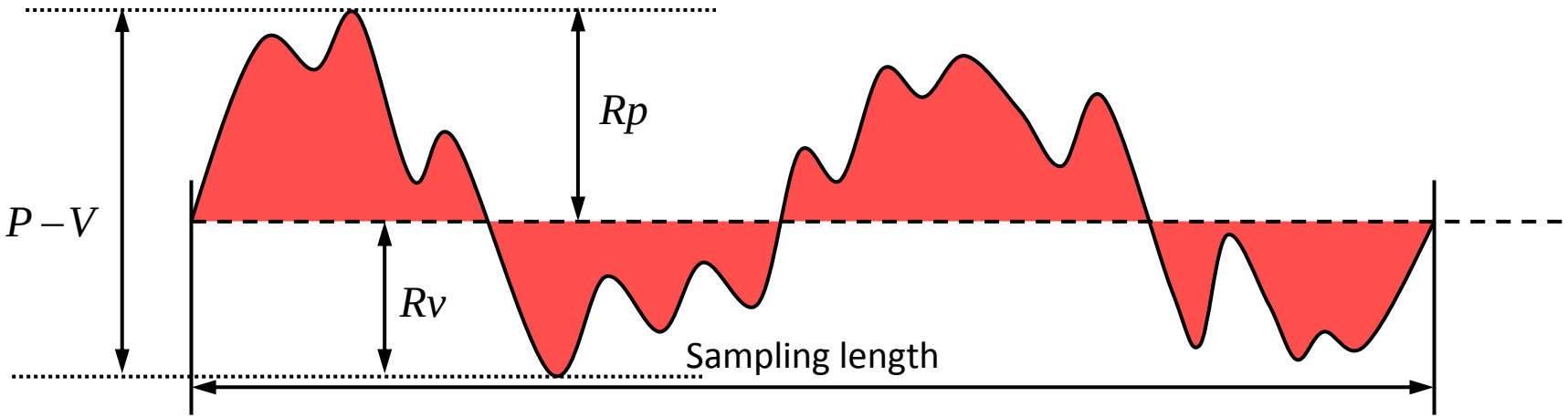
$$Ra = \frac{1}{N}\sum_{n-1}^{N}\left|Rn\right|$$



Maximum height of profile (P-V)

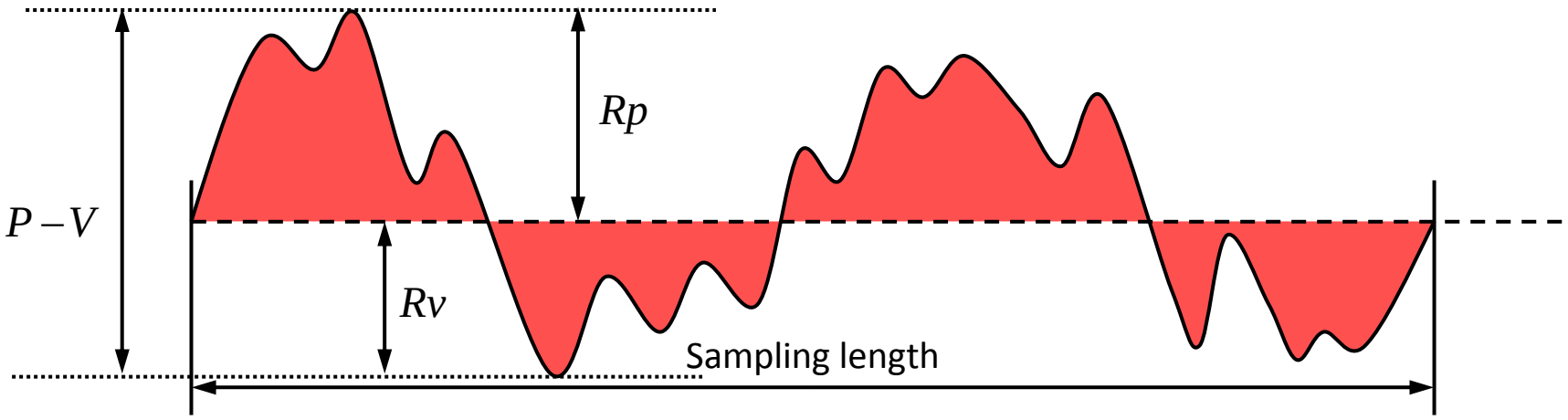
The maximum height of the profile (P-V) indicates the absolute vertical distance between the maximum peak height (Rp) and valley depth (Rv) along the sampling length.

$$P - V = |Rp| + |Rv|$$



Maximum profile peak height / valley depth (Rp/Rv)

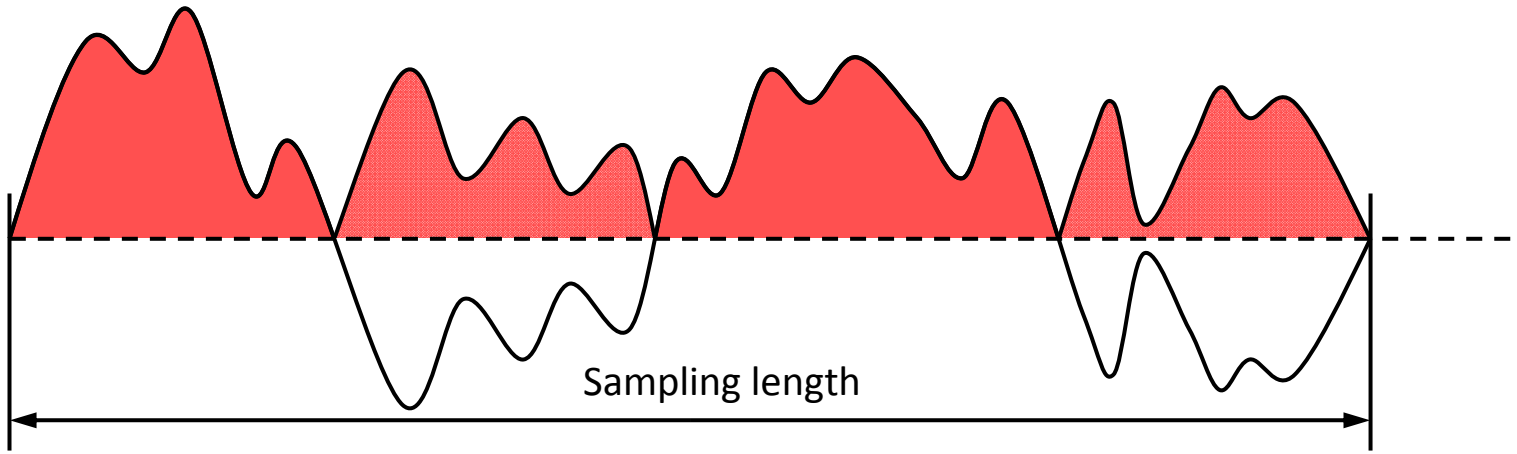
Maximum profile peak height / valley depth indicate the value of highest peak (Rp) / deepest valley (Rv) in a sampling length.



Root mean square deviation (RMS)

Root mean square deviation (RMS) indicates the root mean square along the sampling length.

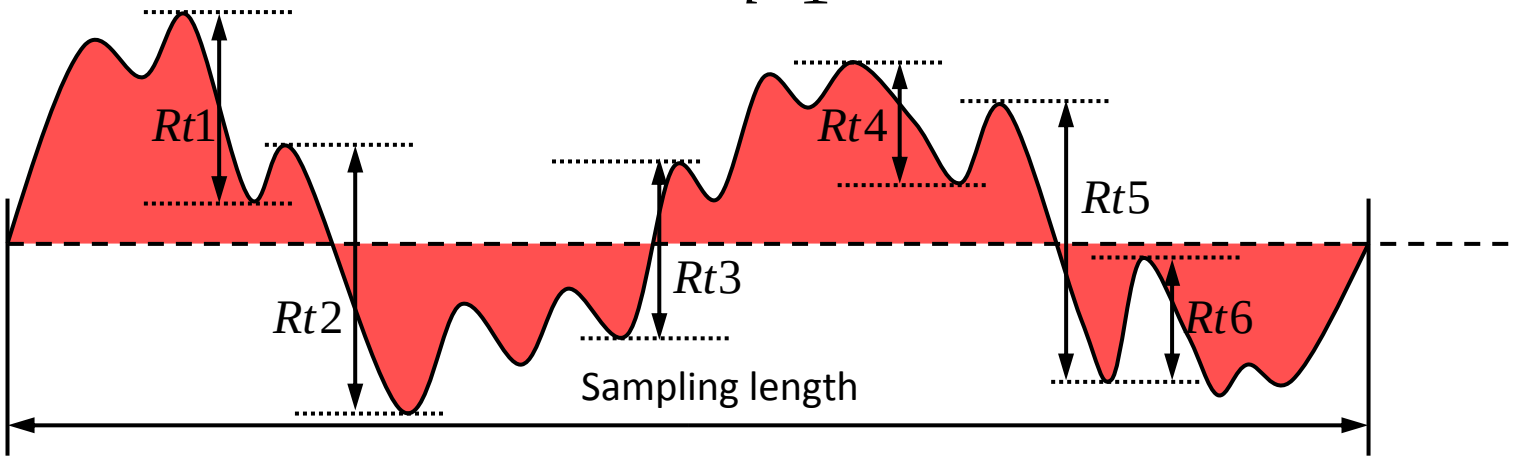
$$RMS = \sqrt{\frac{1}{N}\sum_{n-1}^{N} Rn^2}$$



Mean height of profile elements (Rz)

Mean height of profile elements (Rz) indicates the average value of the height of the curve element along the sampling length. Profile elements consist of a peak and a neighboring valley couple. The peaks (or valleys) that constitutes as an element have minimum height and length standards such that they will be treated as noise and considered a part of the preceding valley (or peak) if the height (or depth) is less than 10% of the maximum height or the length is less than 1% of the segment length.

$$Rz = \frac{1}{m}\sum_{i-1}^{m} Rti$$



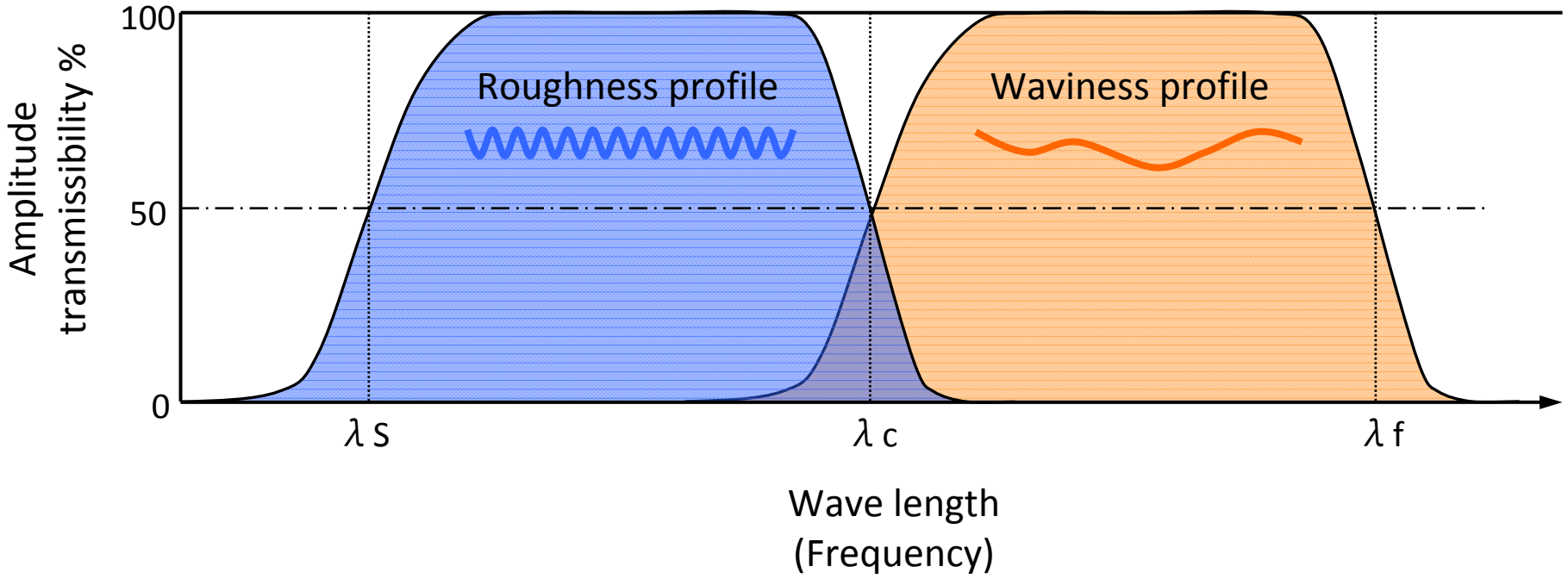
Mean slope (Δ a)

Mean slope indicates the mean ordinate slopes (dR/dX) in sampling length.

$$\Delta a = \frac{1}{N} \sum_{n-1}^{N} \frac{dRn}{dXn}$$

Cutoff (cutoff value)

The cutoff refers to the predetermined wavelength to be removed from a primary profile. A roughness profile is formed by removing the long-wavelength component from the primary profile, and a waviness profile is formed by removing the short-wavelength component from the primary profile.



Primary profile and roughness profile