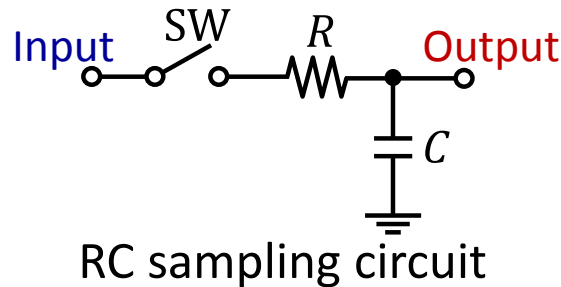


Consideration of Uncertainty Principle in Sampling Circuit

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Sampling
Waveform acquisition
with period T_s



Finite aperture time
→ Lowpass filter effect



Clarification of
design trade-off
in terms of

uncertainty principle

$$\sigma_{\omega} \sigma_{\tau_1} + \frac{1}{6} (\sigma_{\omega} \tau_2)^2 \geq 1$$

$$\begin{cases} \sigma_{\omega} : \text{bandwidth} \\ \sigma_{\tau_1} : \text{time constant RC} \\ \tau_2 : \text{aperture time} \end{cases}$$

