Noise analysis, filtering and shaping

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Where You're From

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- ▶ Limitations of the maximum energy resolution
- ▶ Noise analysis of pre-amplifier stage
- ▶ Filtering and shaping

Hands-on

1. Analysis: find the a and b coefficients
2. Analysis: CR-RC shaper
3. SPICE: Noise PSD of pre-amplifier output
4. SPICE: Comparison of different filter/shaper structure

Review

review of the typical signal processing chain in the energy measurement

Detector resolution

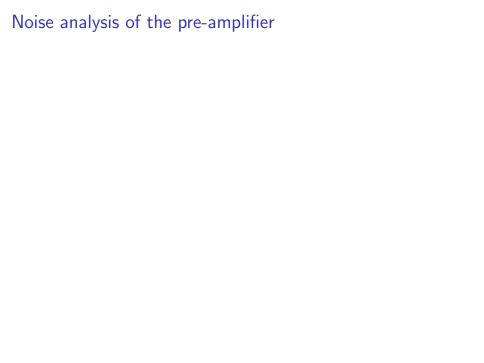# Electronic resolution
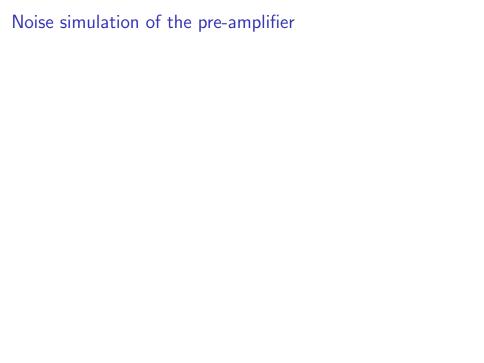
Noise sources

Noise analysis

Noise of pre-amplifier

filtering and shaping

CR-RC

S-G shaper

Active shaper

Noise analysis of the pre-amplifier

Noise simulation of the pre-amplifier

CR-RC theoretical analysis

CR-RC simulation

Comparison of different shaper structure