Experiment 5: Operational Amplifier

Student Group

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Preparation for the laboratory

in the ILIAS course

Read the materials for Experiment 5 here.
They will be published one week before the experiment.

Preparation for the oral short exam

For this experiment, you should be able to apply and explain the following concepts:

1. “golden rules” for the negatively feedback, idealized operational amplifier
2. deviating properties of the real operational amplifier (e.g., output swing range, slew rate)
3. output-voltage waveform U_A of the inverting integrator (inverting integrator) for different input voltages U_E, e.g.
    1. DC voltage
    2. square-wave voltage
    3. arbitrary voltage waveform
4. integration time constant of the inverting integrator
5. Schmitt trigger
    1. difference in feedback compared to the inverting integrator
    2. idealized relationship between U_E and U_A
    3. idealized line diagram: U_E and U_A as a function of time
    4. switching thresholds
    5. threshold voltage
    6. hysteresis
    7. real behavior: output “in saturation”
6. structure of the triangle–square-wave generator