

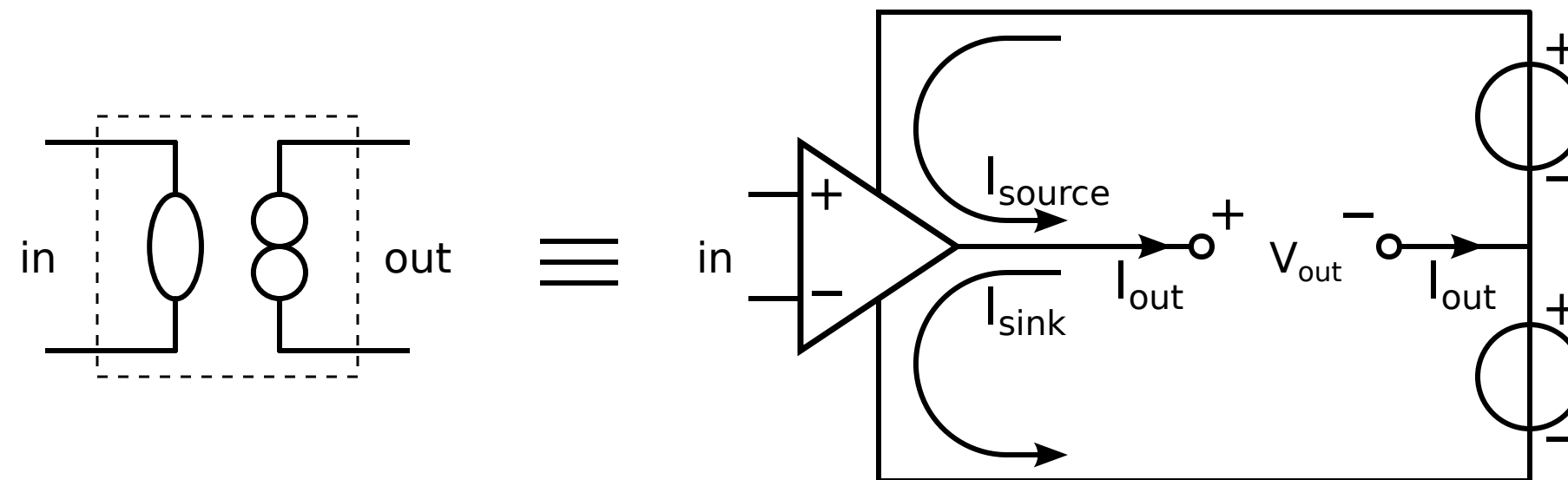
Structured Electronic Design

Negative Feedback Amplifiers with OpAmp Controllers

Anton J.M. Montagne

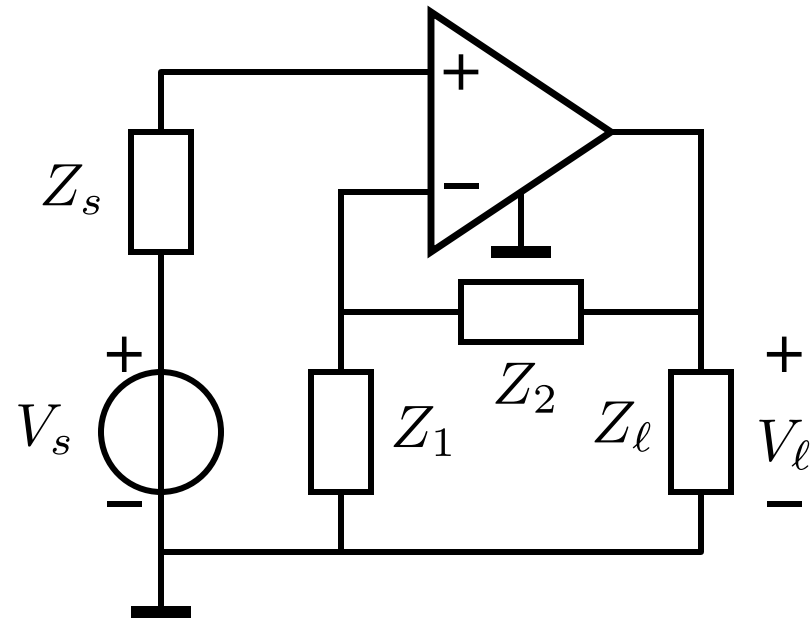
Wrap-up

1. Amplifier types
 - a. Nine unilateral types
 - b. Six non unilateral types
 - c. Five port isolation configurations for each type
2. All types can be realized with controllers that behave as natural two ports and transformers and gyrators as feedback elements
3. The operational amplifier does not behave as a natural two port:



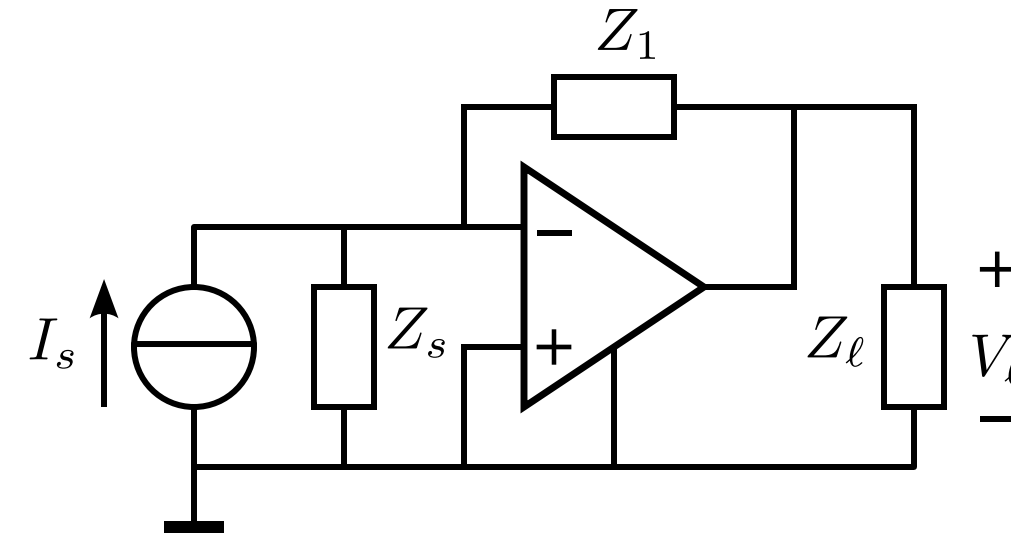
- a. The return path for the output current is split over the supply terminals
- b. This limits the number of configurations that can be realized with a single controller
- c. Other configurations require the use of other feedback techniques and/or transistors

Single-loop passive feedback configurations



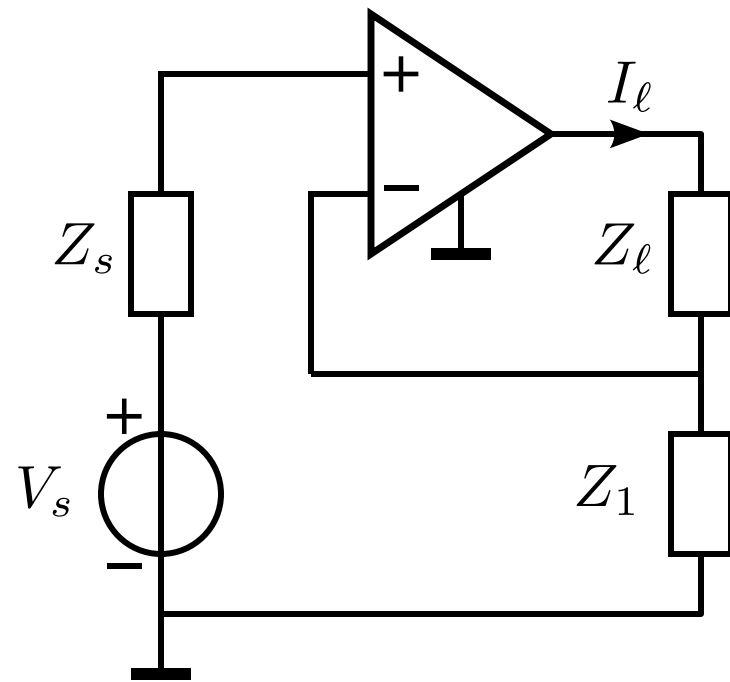
Non-inverting
voltage amplifier

- Grounded source
- Grounded load



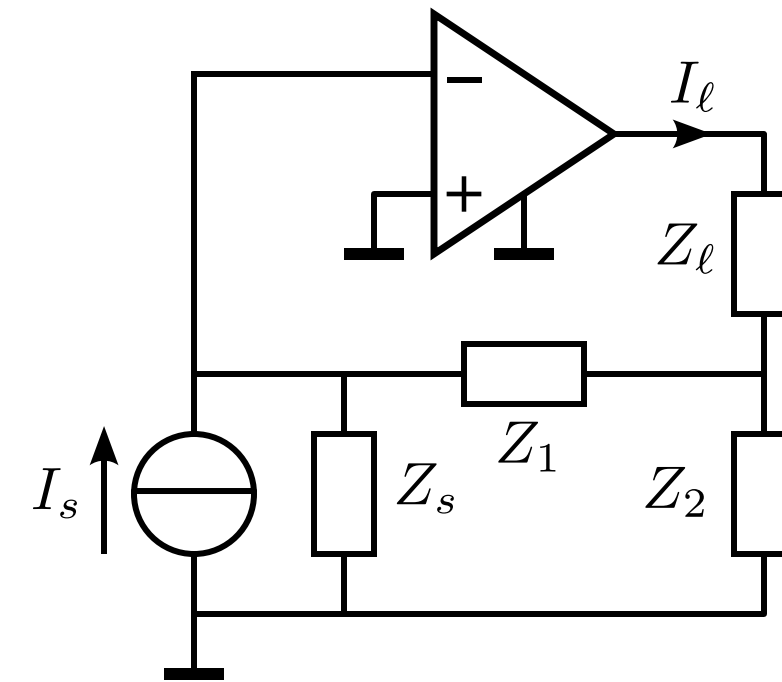
Inverting
transimpedance

- Grounded source
- Grounded load



Transadmittance

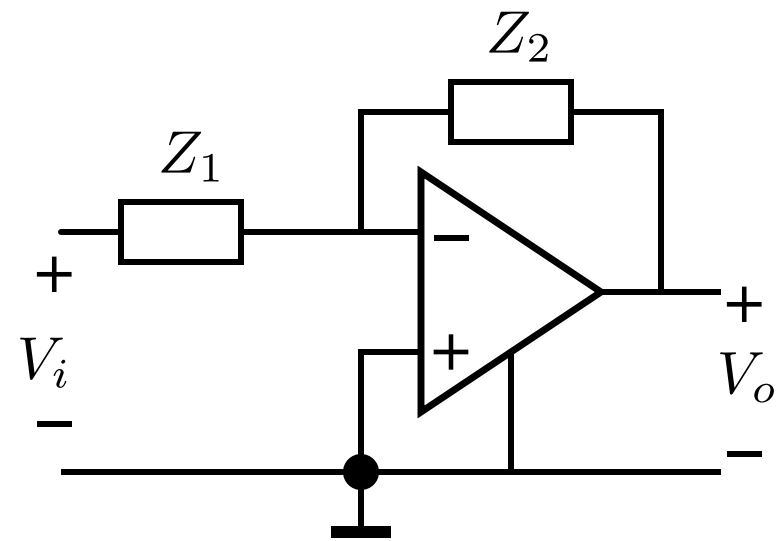
- Grounded source
- Floating load



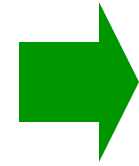
Current amplifier

- Grounded source
- Floating load

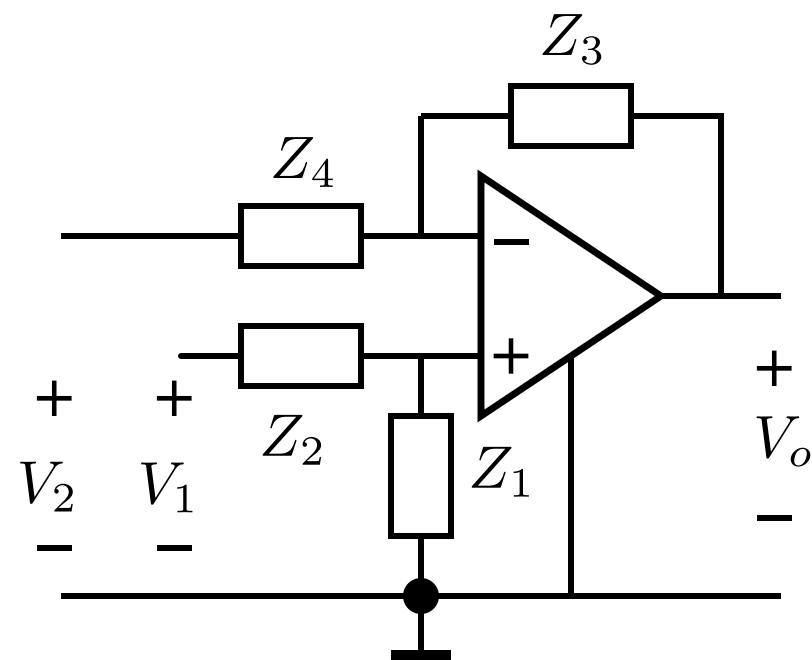
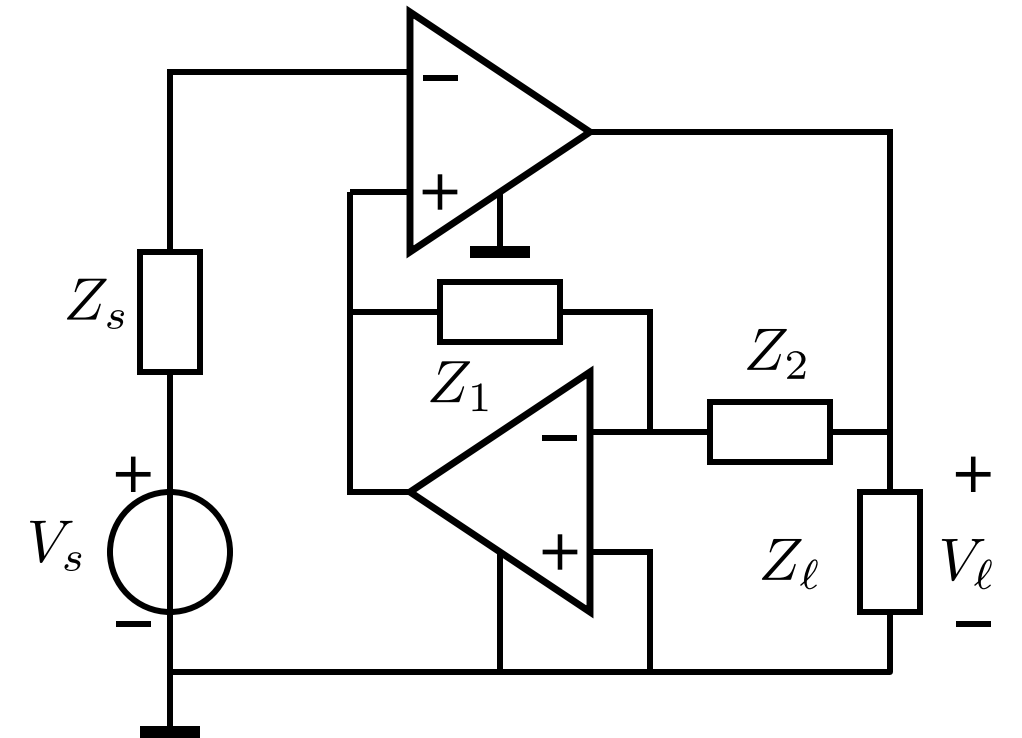
Active feedback



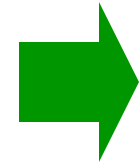
Active inverting
voltage attenuator



Inverting
voltage amplifier



Floating voltage to
grounded voltage



Transadmittance
with grounded
load

