Structured Electronic Design

EE4109
Active antenna configurations

Anton J.M. Montagne

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Design of amplifier configurations (recap)

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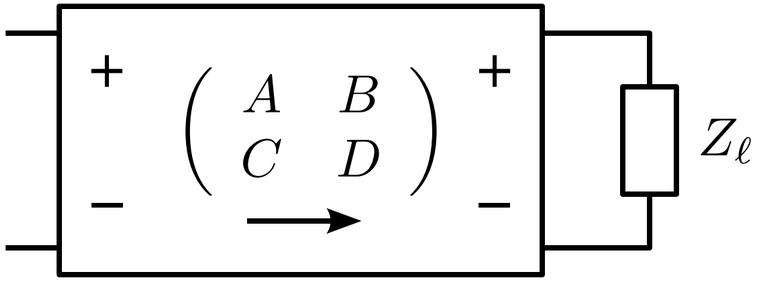

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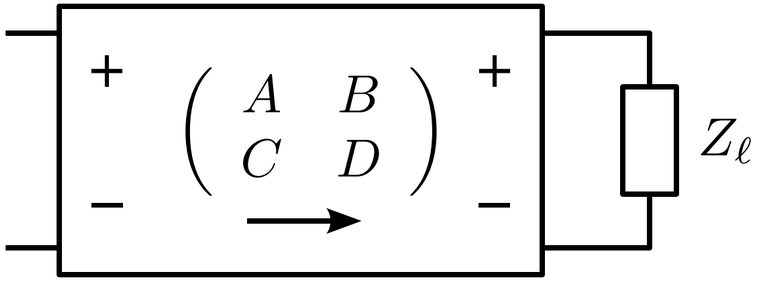
Design of amplifier configurations (recap)

$$Z_i = \frac{AZ_\ell + B}{CZ_\ell + D}$$



Z_ℓ

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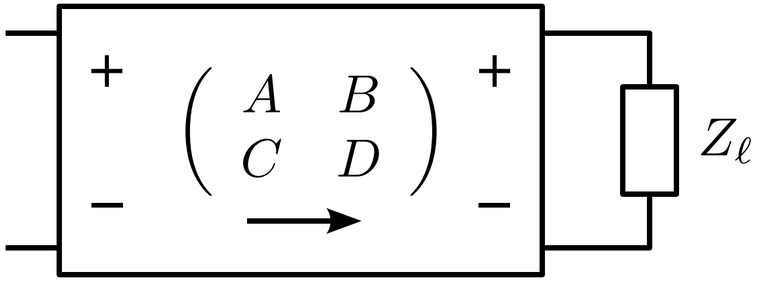

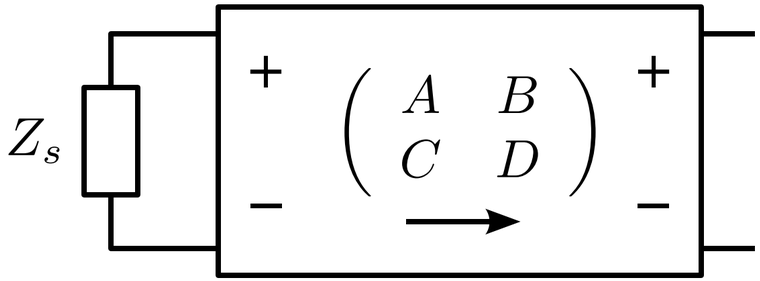

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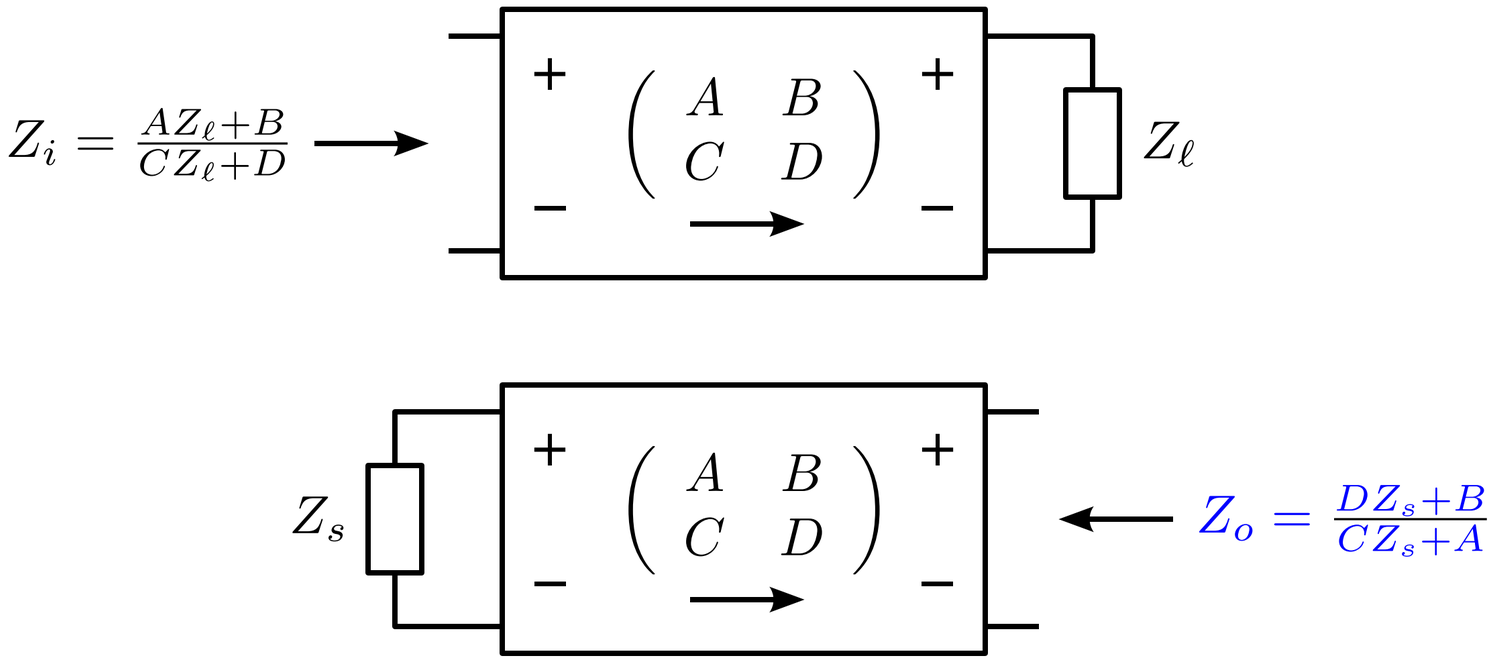

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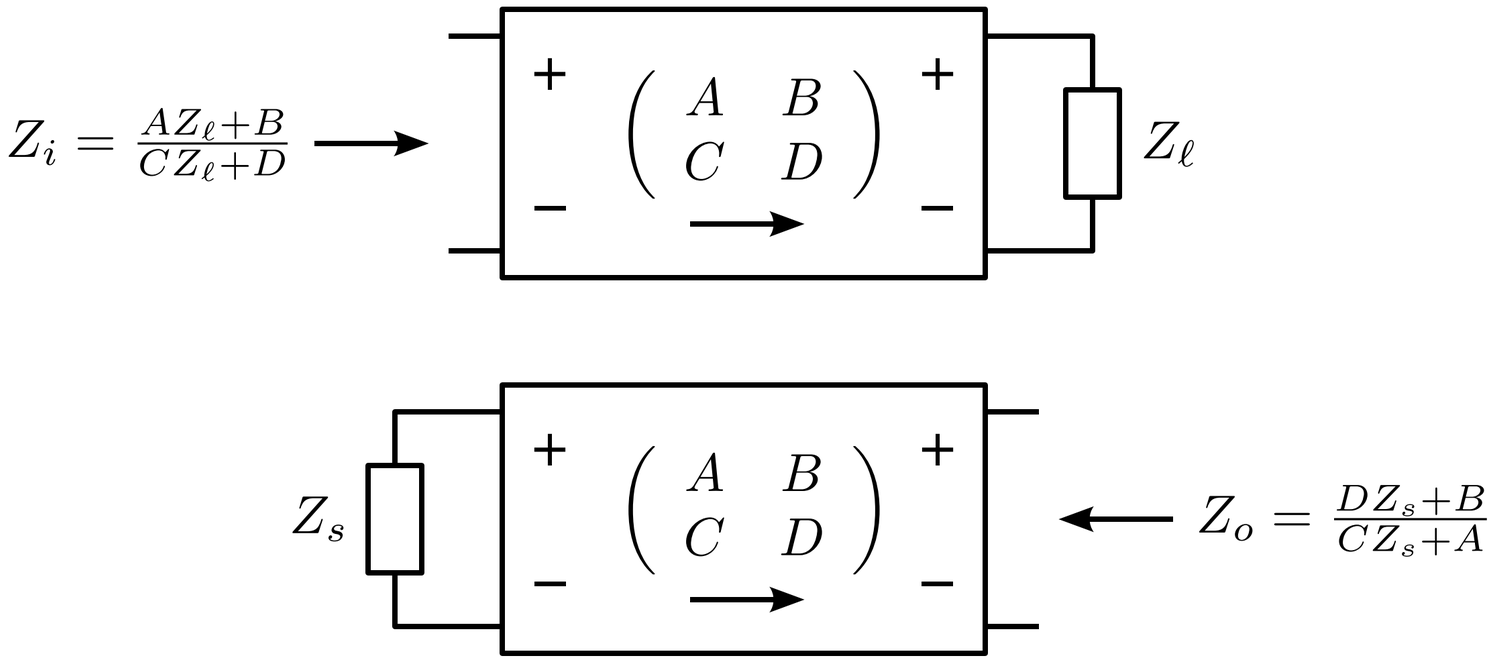

Design of negative feedback amplifiers:

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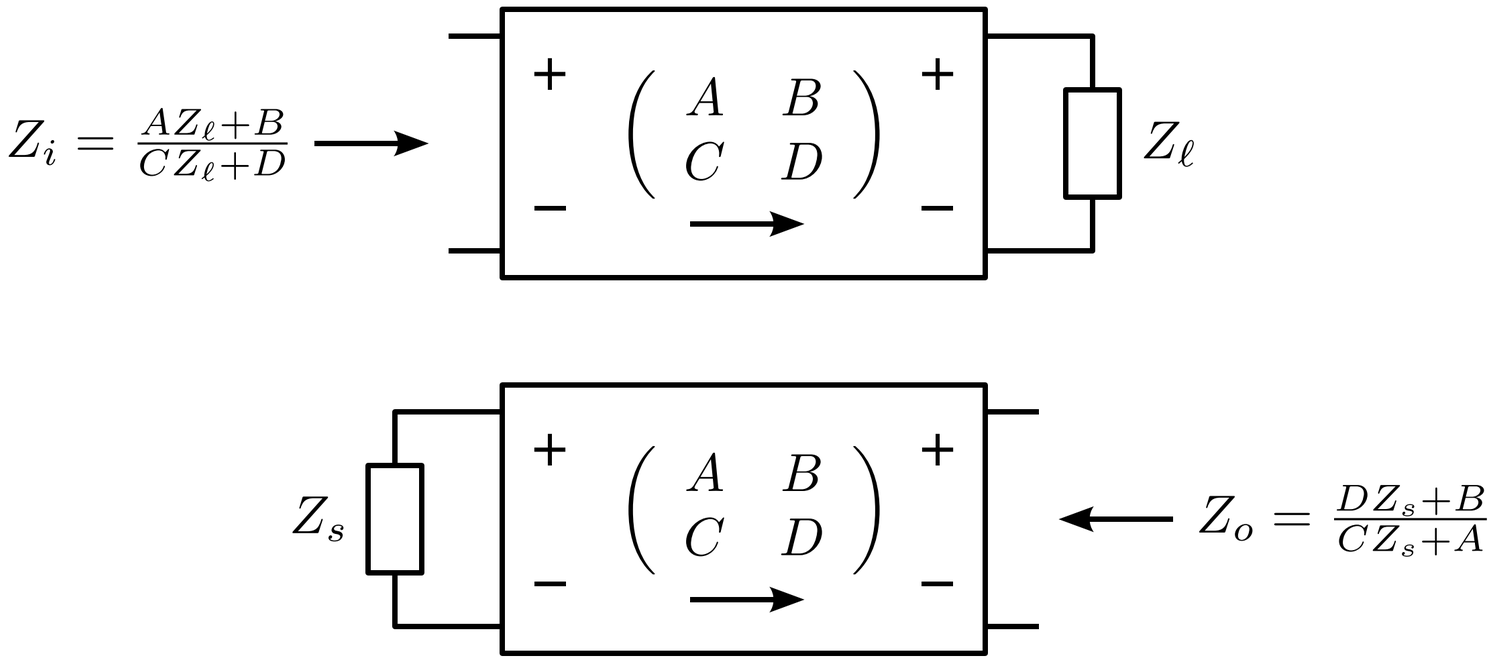

Design of negative feedback amplifiers:

Each T1 parameter can be set with a feedback loop

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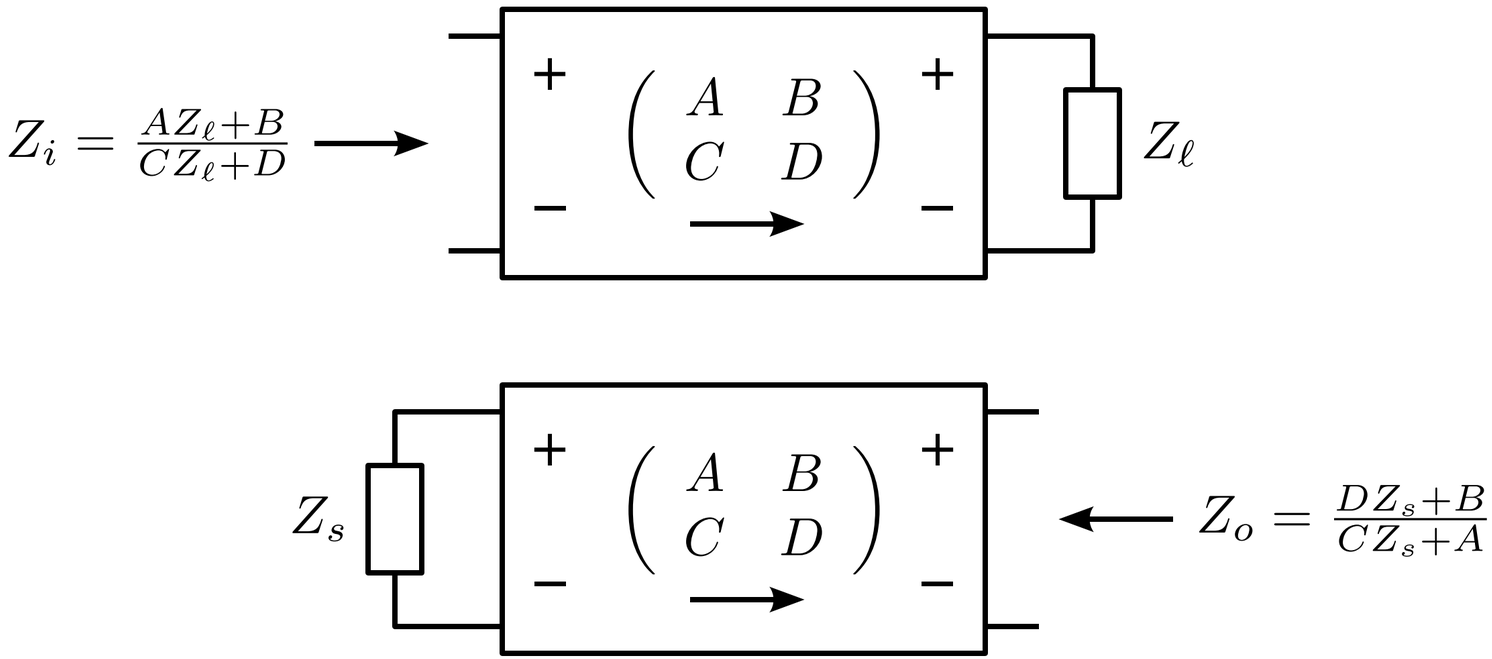

Design of negative feedback amplifiers:

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Design of amplifier configurations (recap)

Set transmission parameters with feedback:

Generate a copy of the source signal from the load signal with a feedback network

- Input signal of the feedback network = load quantity of interest (current or voltage)
- Output signal of the feedback network = accurate copy of the source quantity of interest
- Transfer of feedback network equals the required value of the corresponding T1 parameter

	Source voltage	Source current	Load voltage	Load current
T1 parameters	A, B	C, D	A, C	B, D
Feedback type	series comparison	parallel comparison	parallel sensing	series sensing

Controller (error amplifier) generates the load quantity and nullifies comparison result

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$$Z_i = \frac{AZ_\ell + B}{CZ_\ell + D} \qquad Z_o = \frac{DZ_s + B}{CZ_s + A}$$

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Source-to-load transfer:

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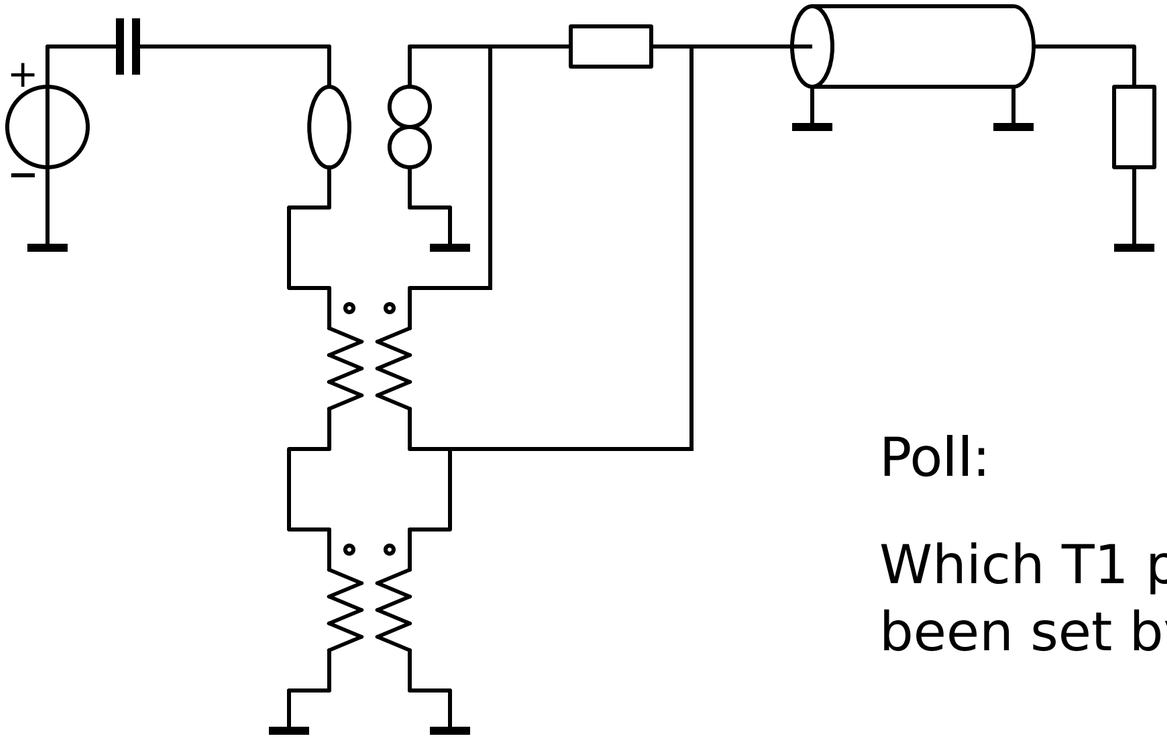
Amplifier configurations



Poll:

Which T1 parameters have been set by negative feedback?

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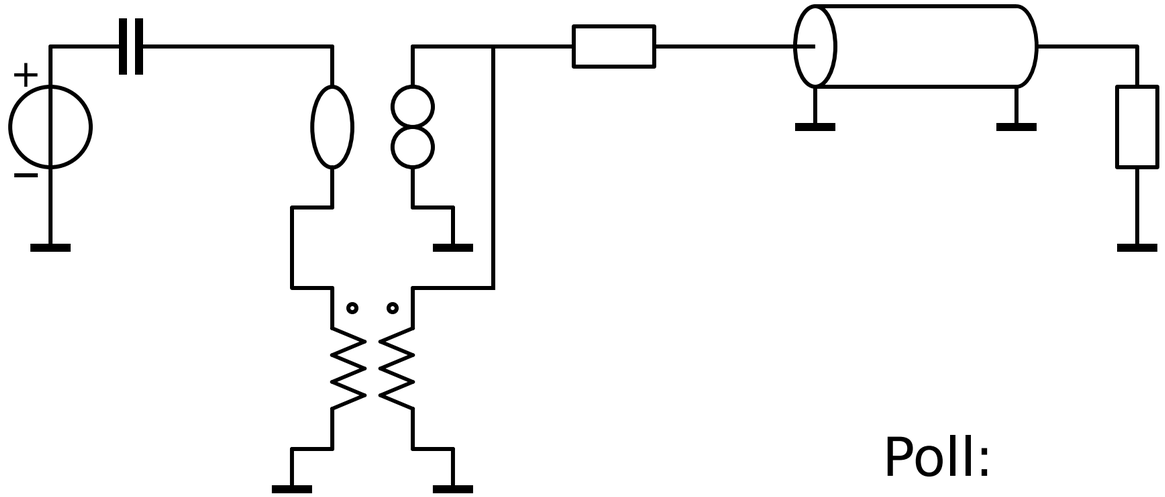

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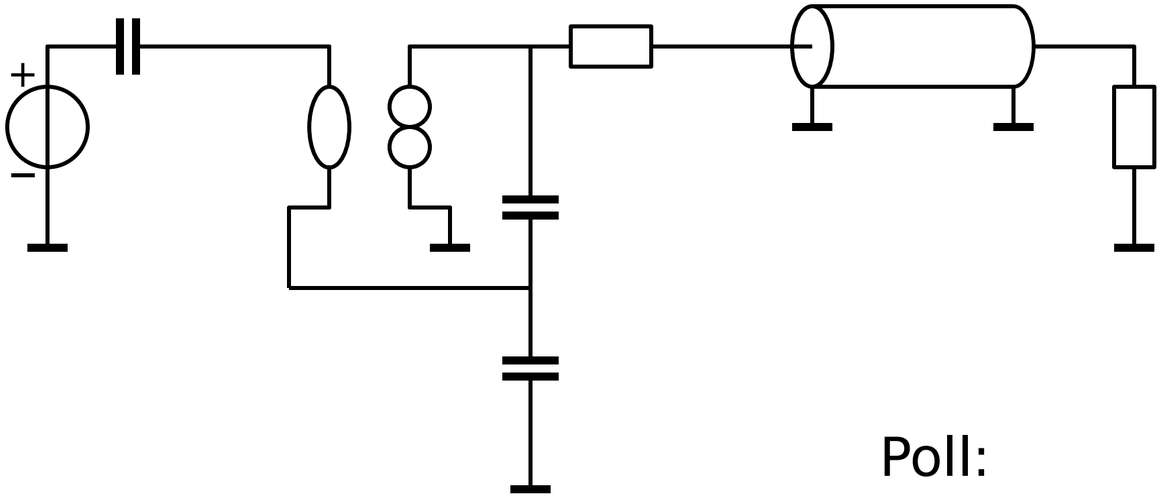

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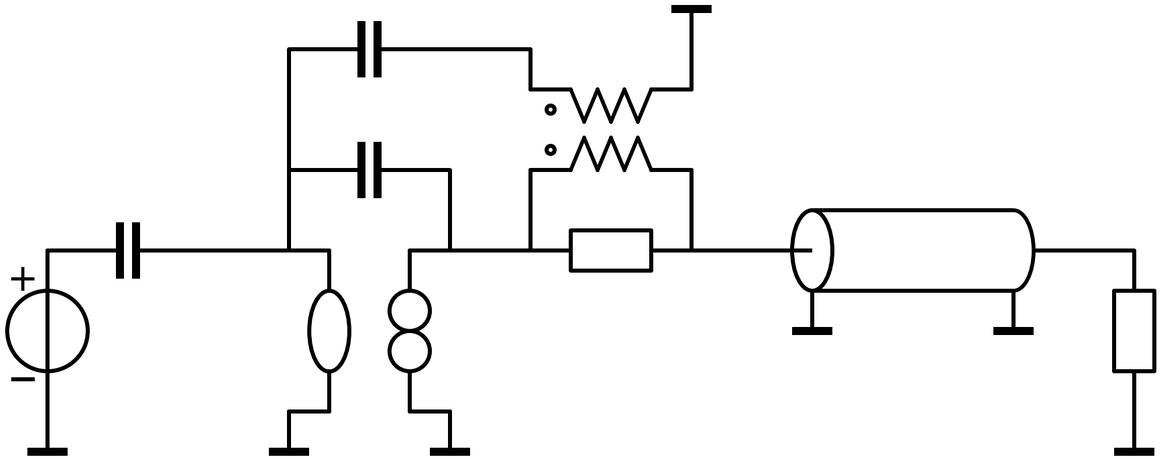

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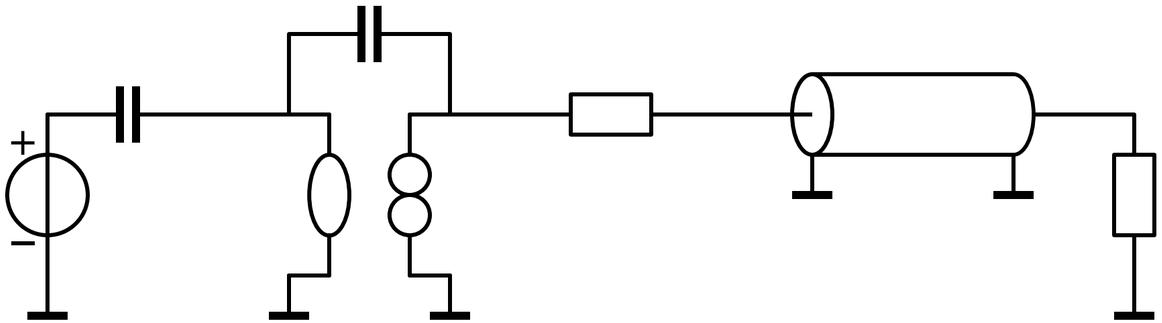

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Amplifier configurations

Invent more configurations yourself!

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