Structured Electronic Design

Feedback model of Black

Anton J.M. Montagne

Invention of negative feedback

Invention of negative feedback

1927: Black: first negative feedback amplifier

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1932: Black: Wave translation system

Invention of negative feedback

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1932: Nyquist: Regeneration theory

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1945: Bode: Network analysis and Feedback Amplifier Design

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1932: Black: Wave translation system

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1945: Bode: Network analysis and Feedback Amplifier Design

Black's feedback model

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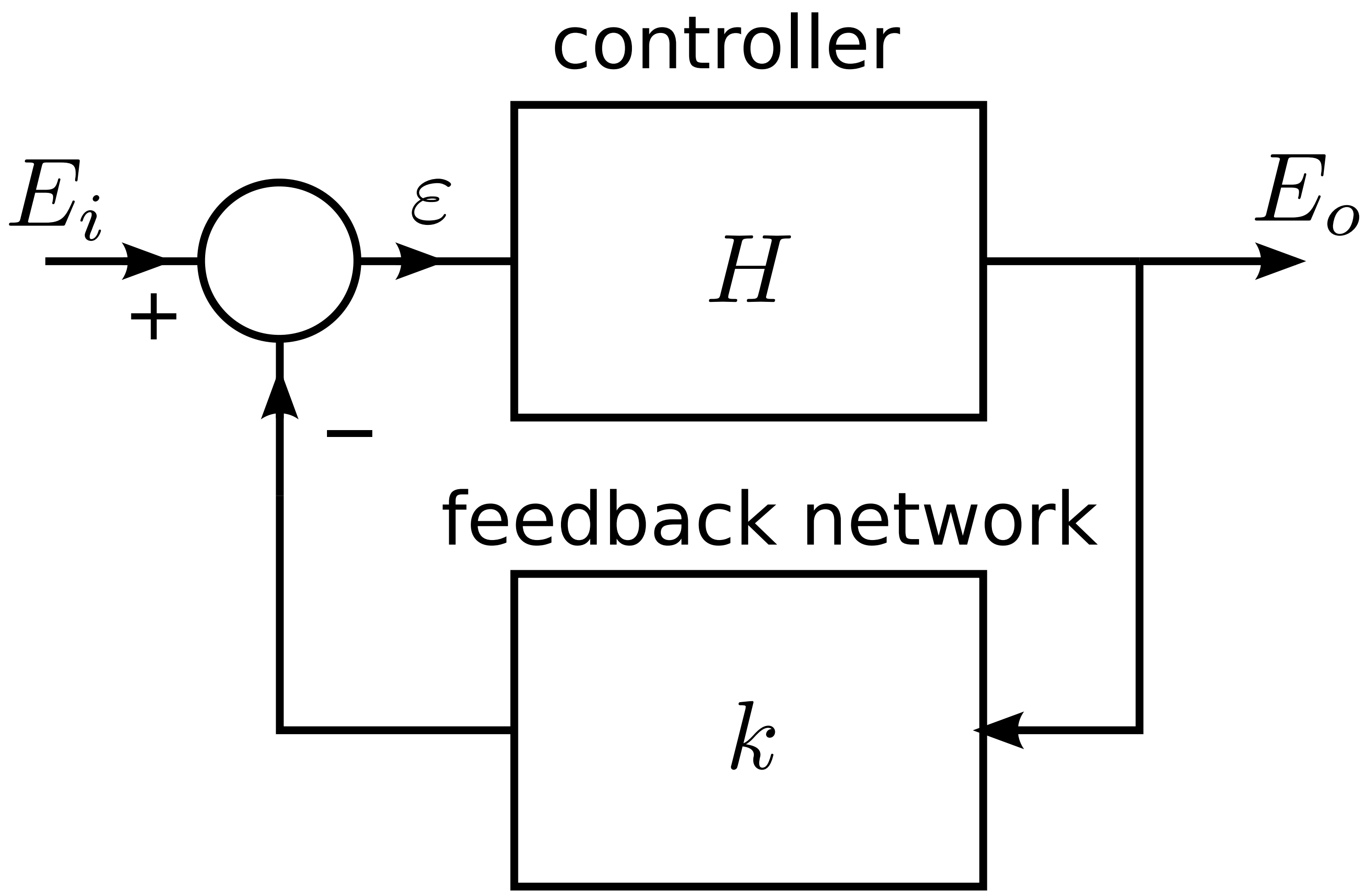

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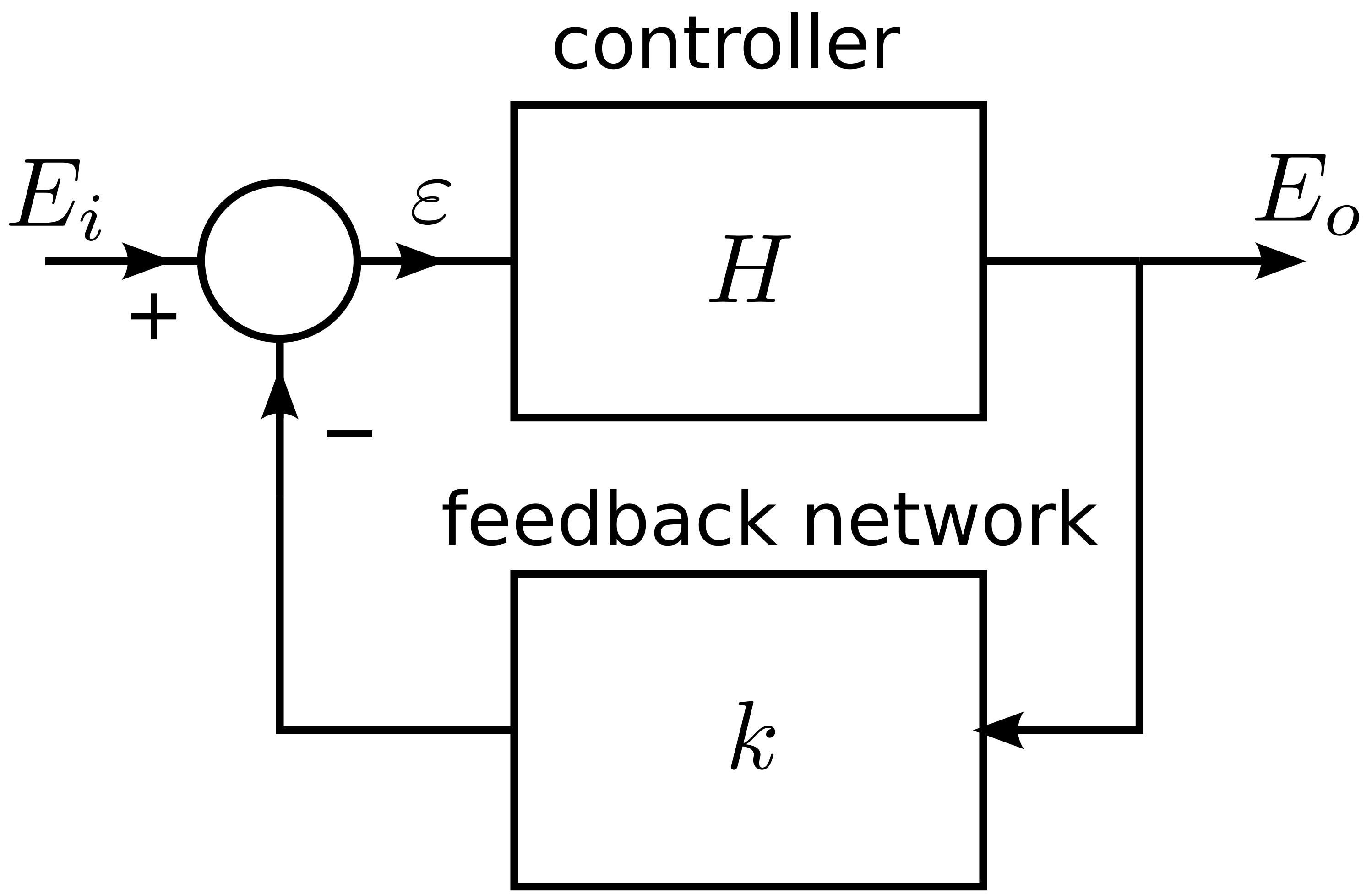
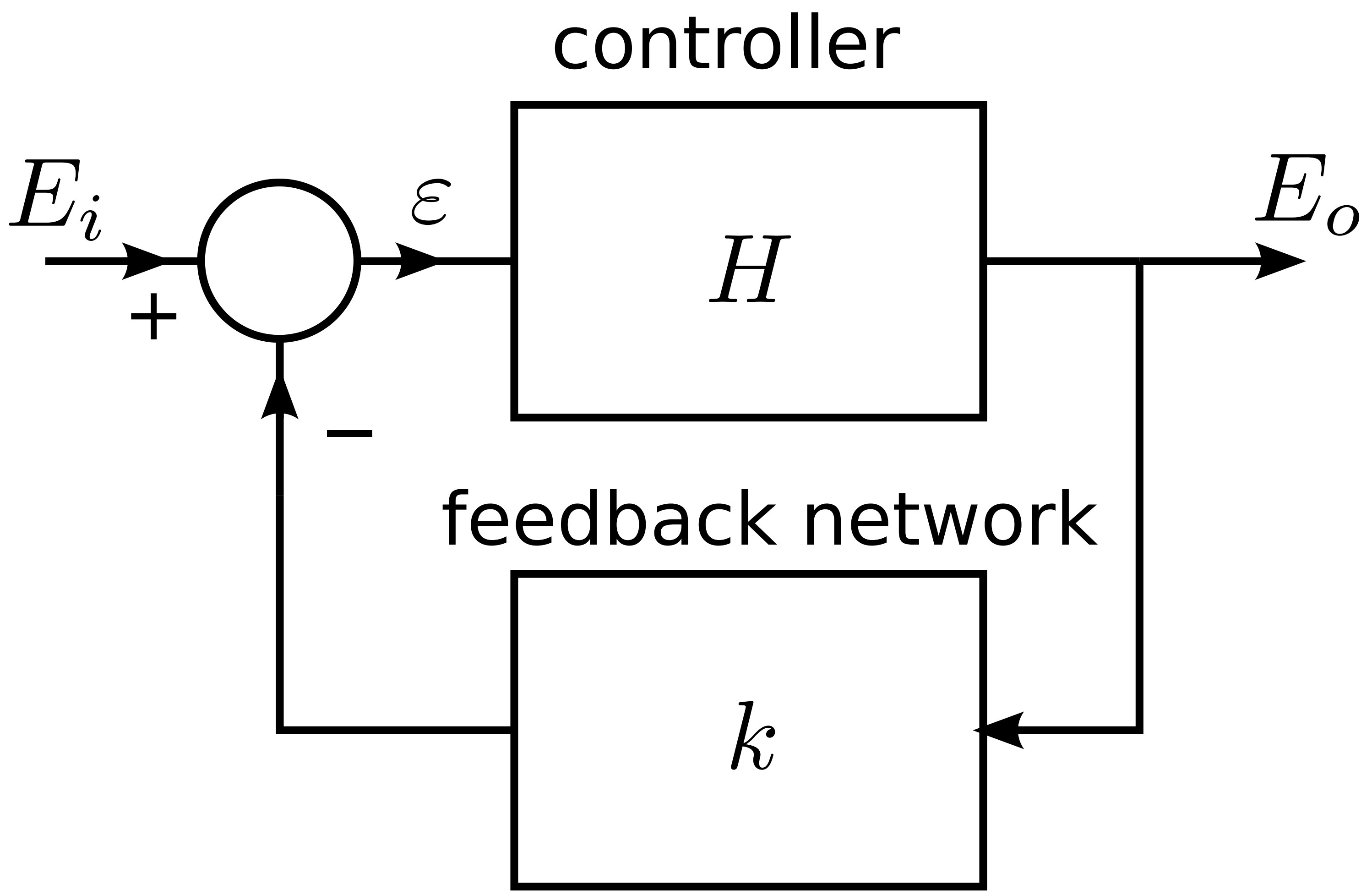


Equations:

$$\varepsilon = E_i - kE_o,$$
$$\varepsilon = \frac{1}{H}E_o.$$

Black's feedback model



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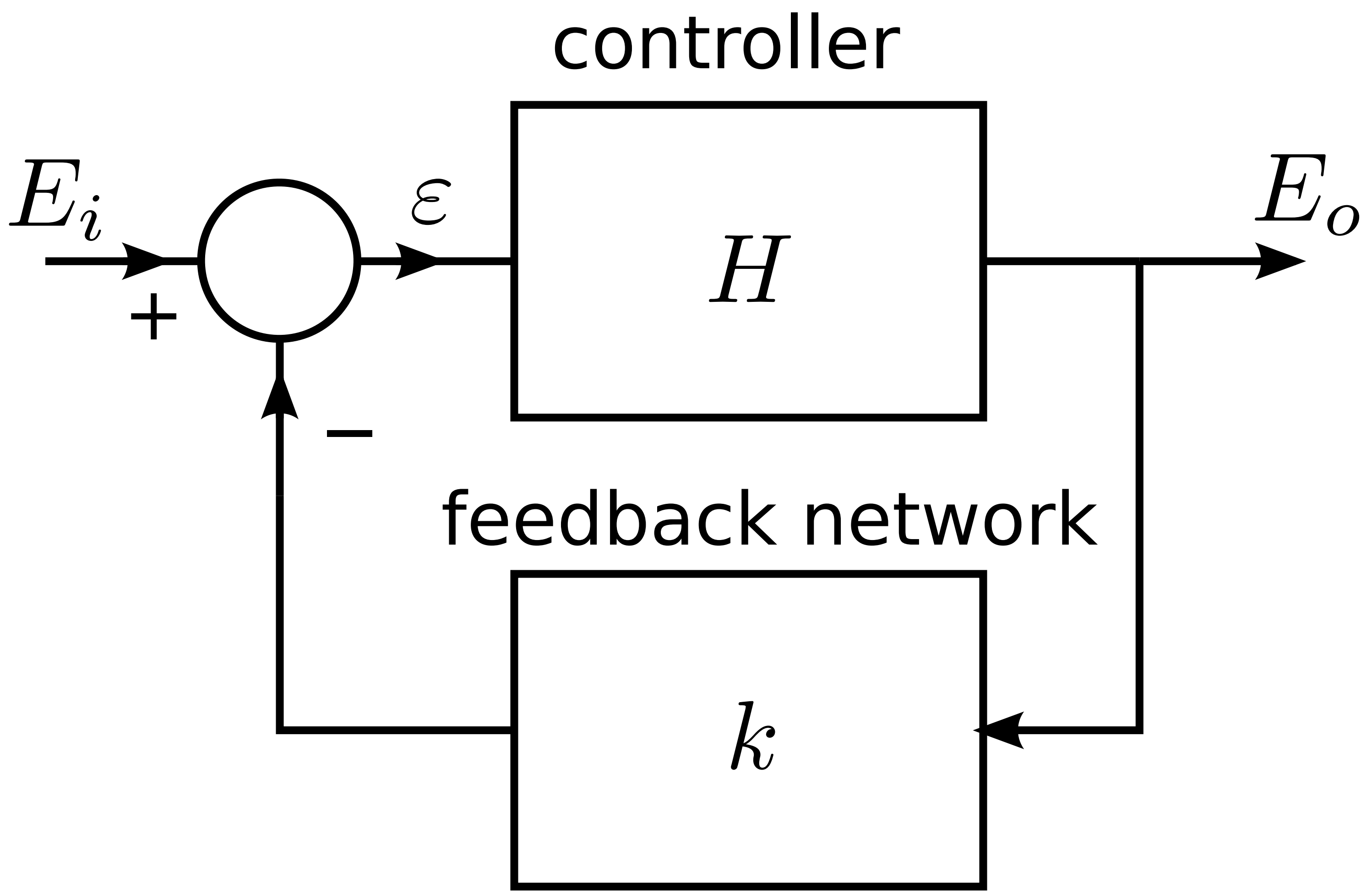

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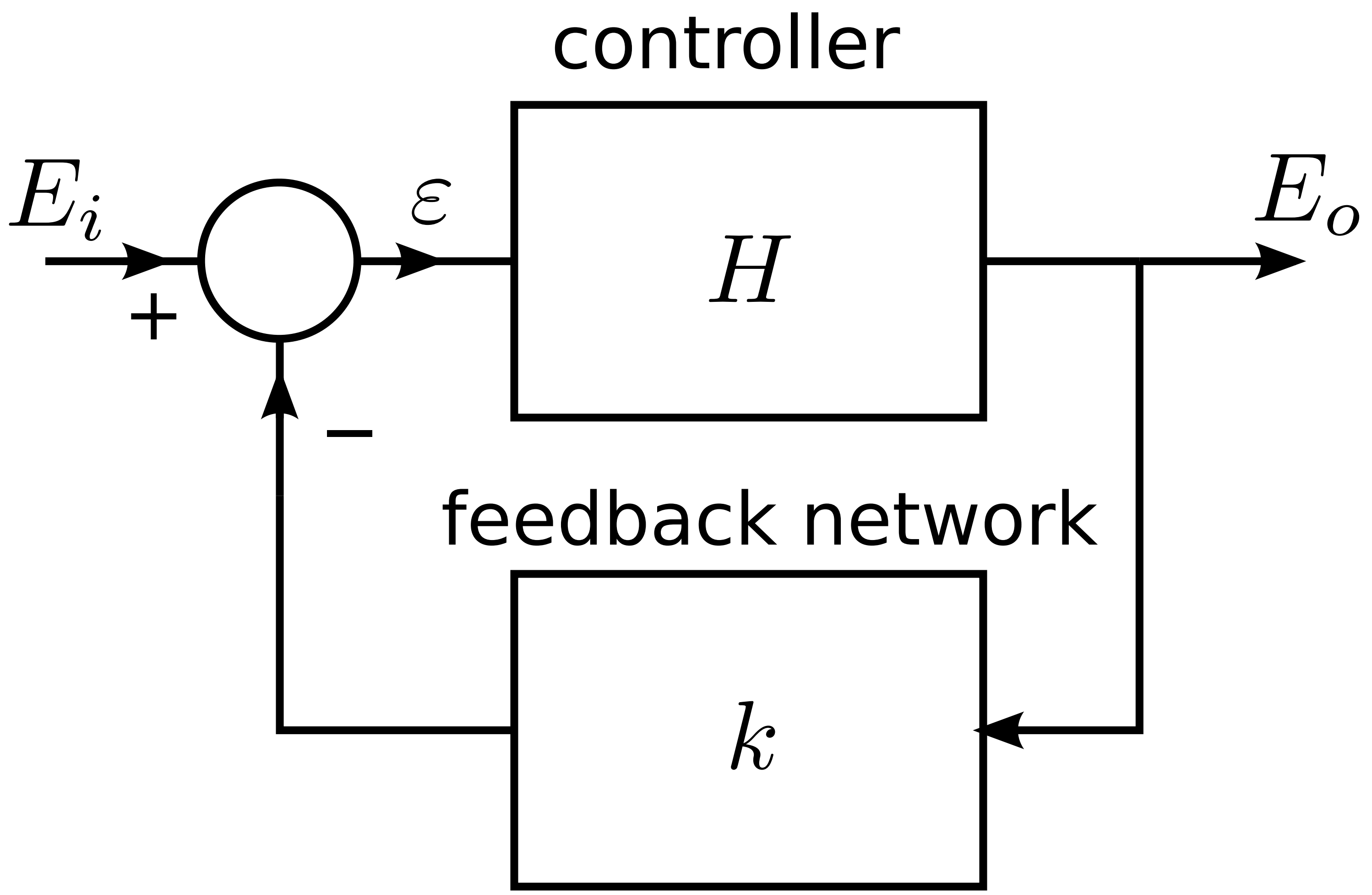

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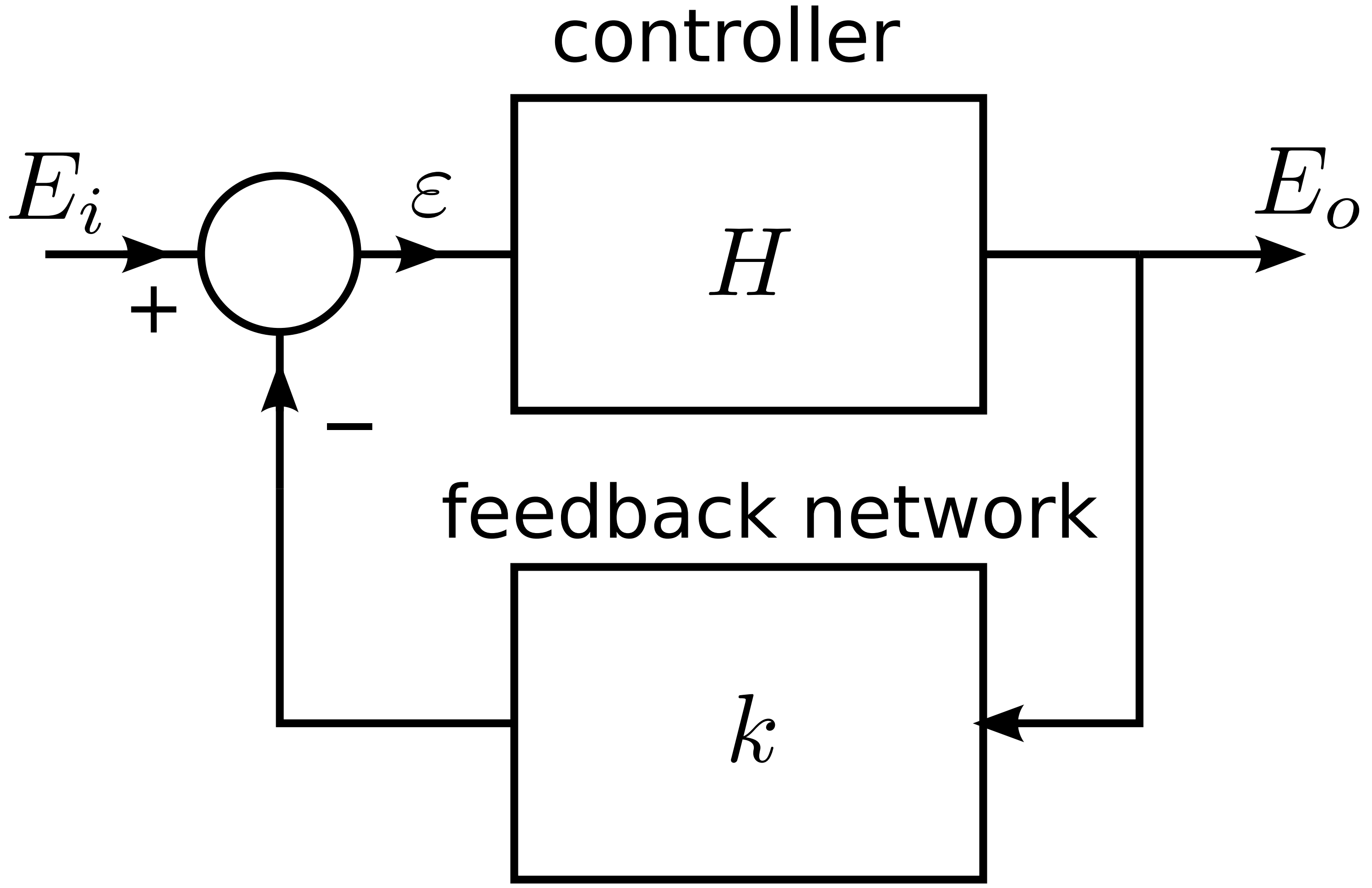

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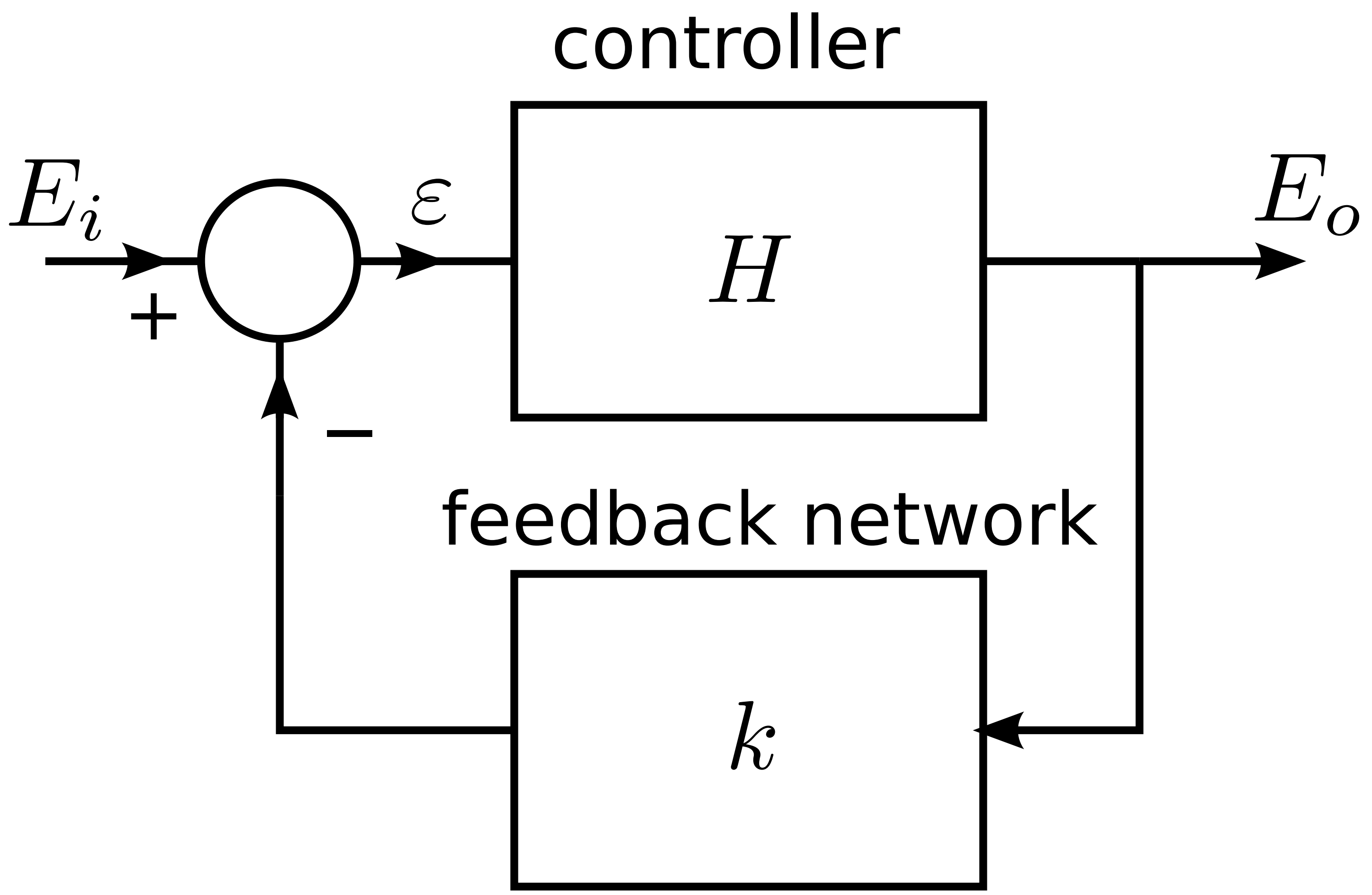

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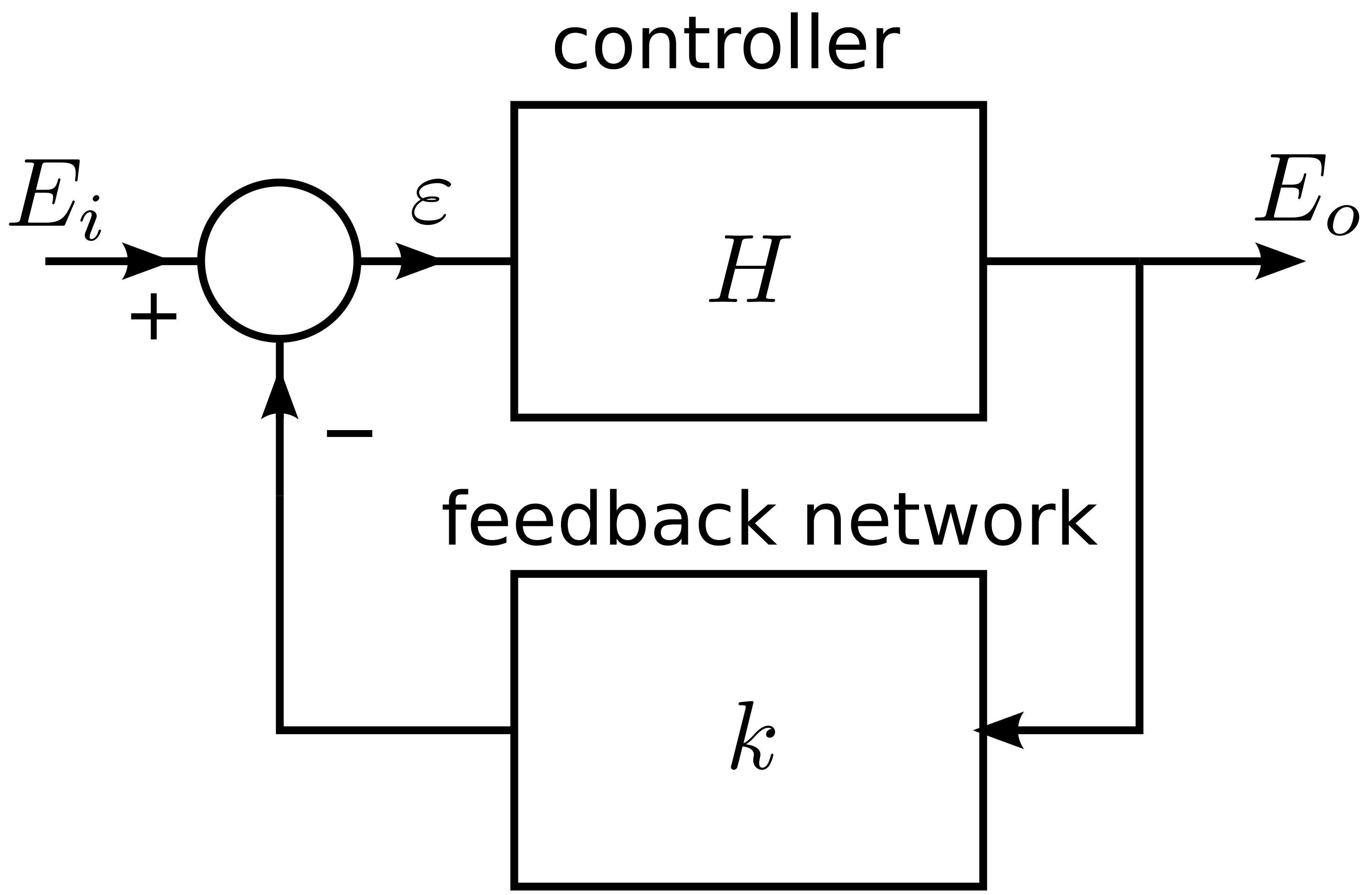

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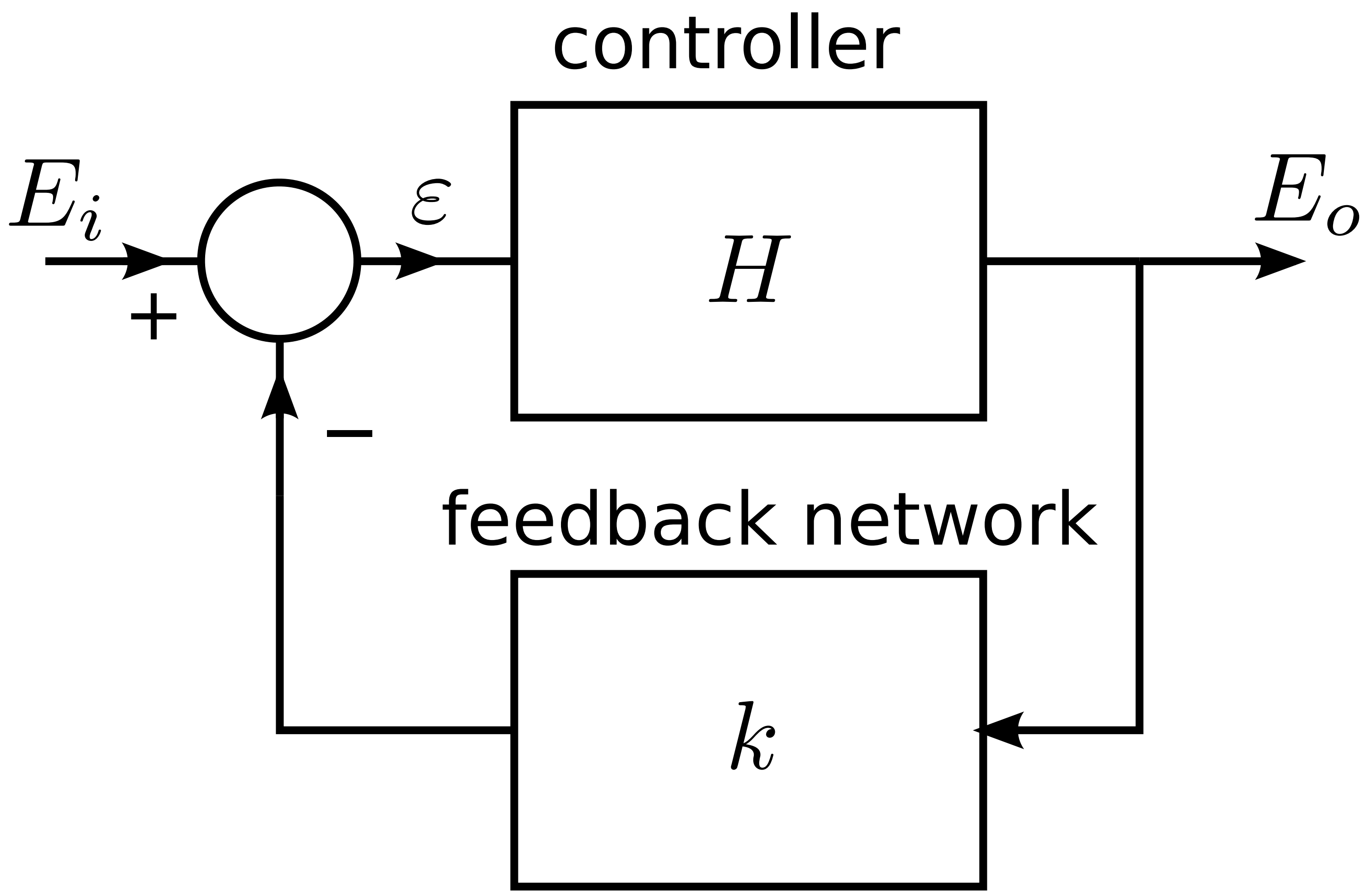

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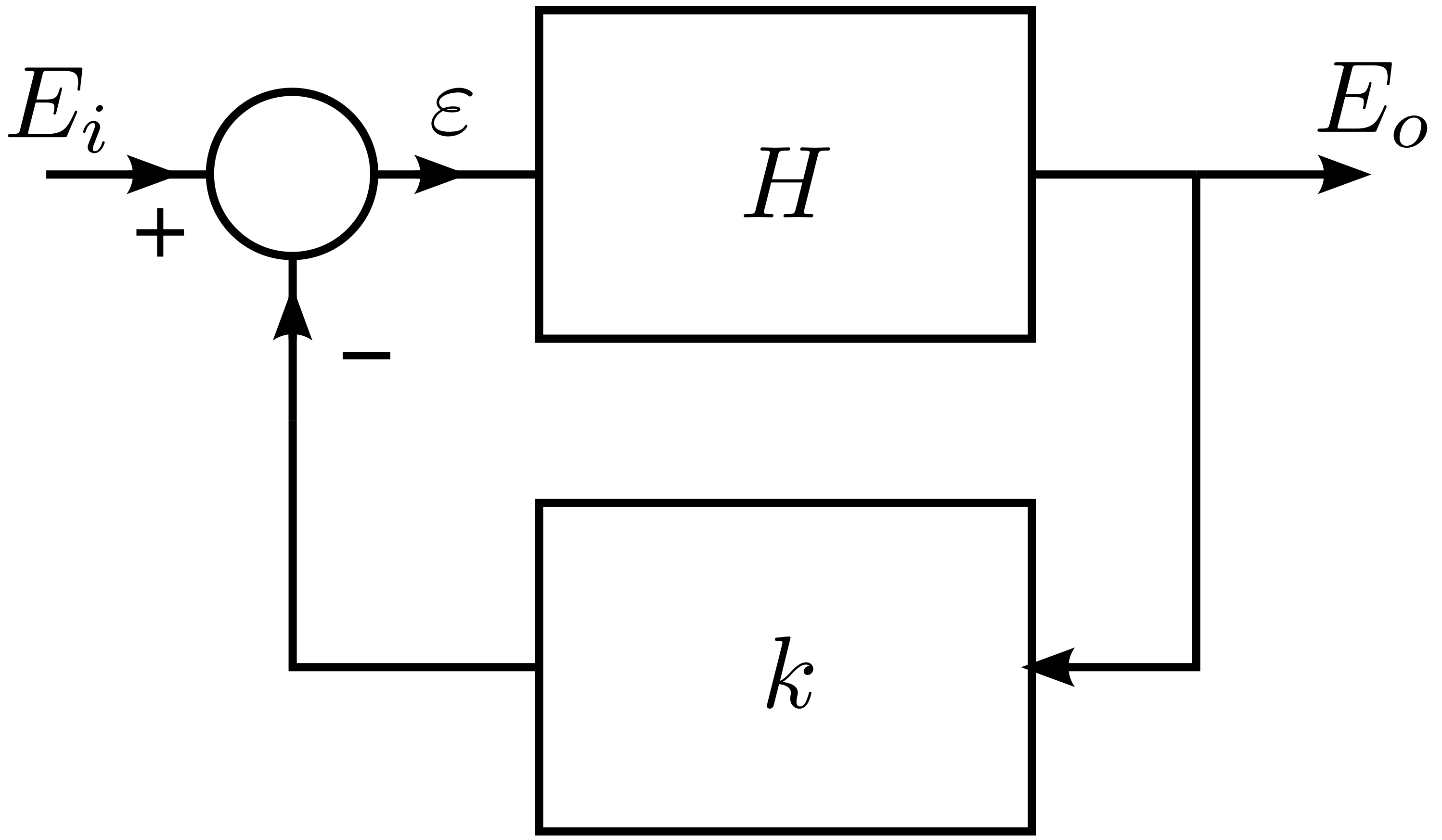

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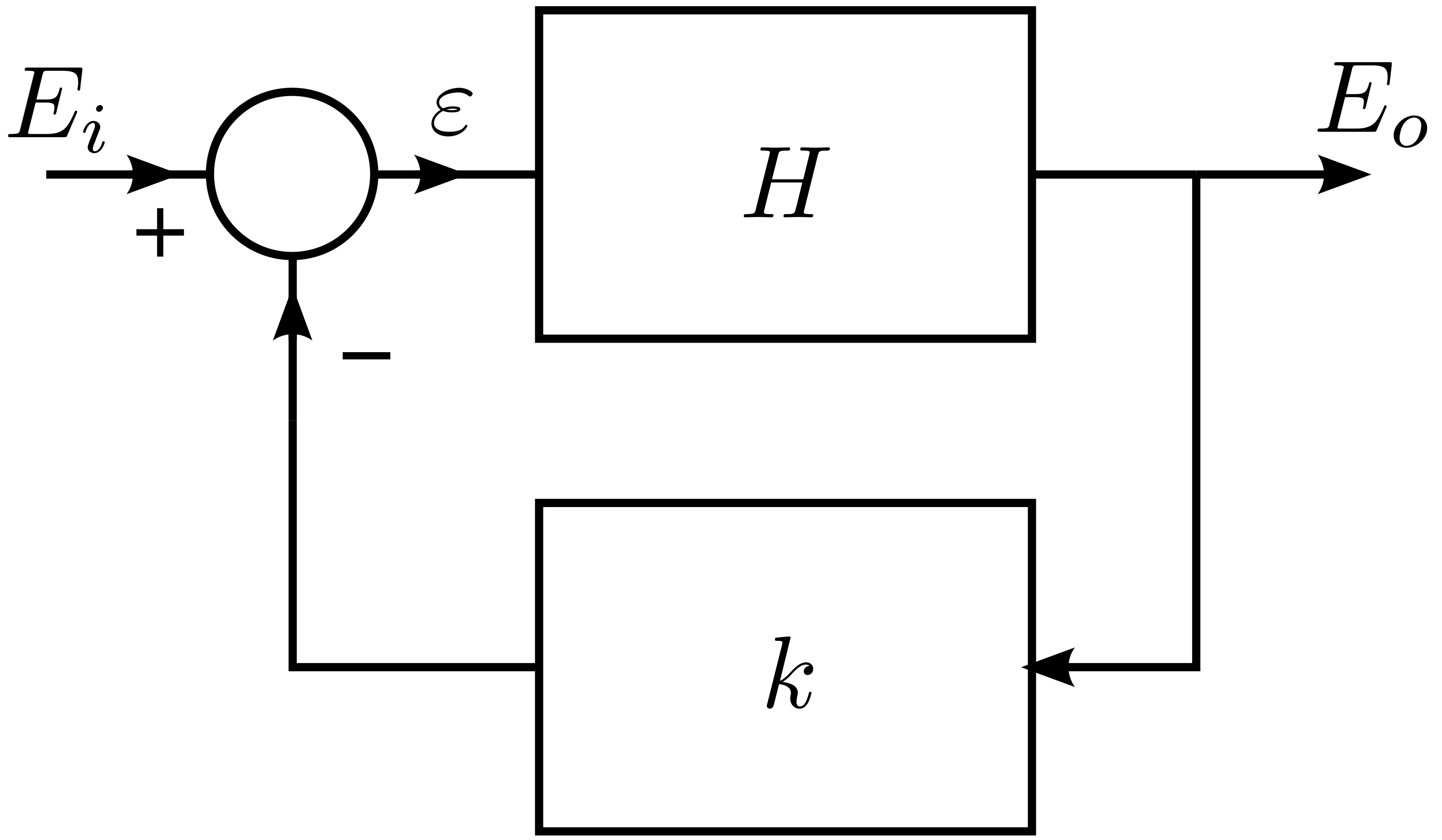

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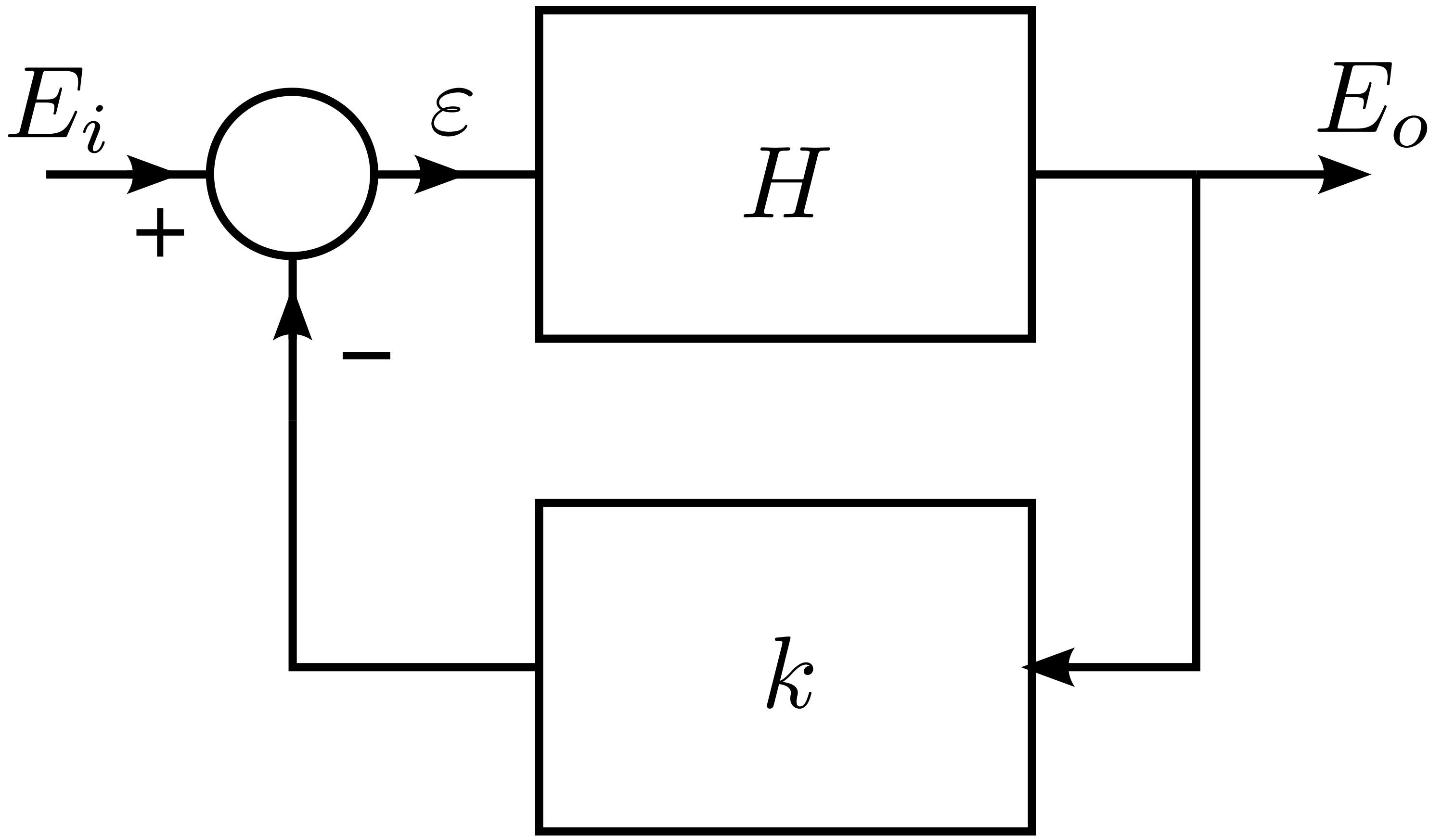

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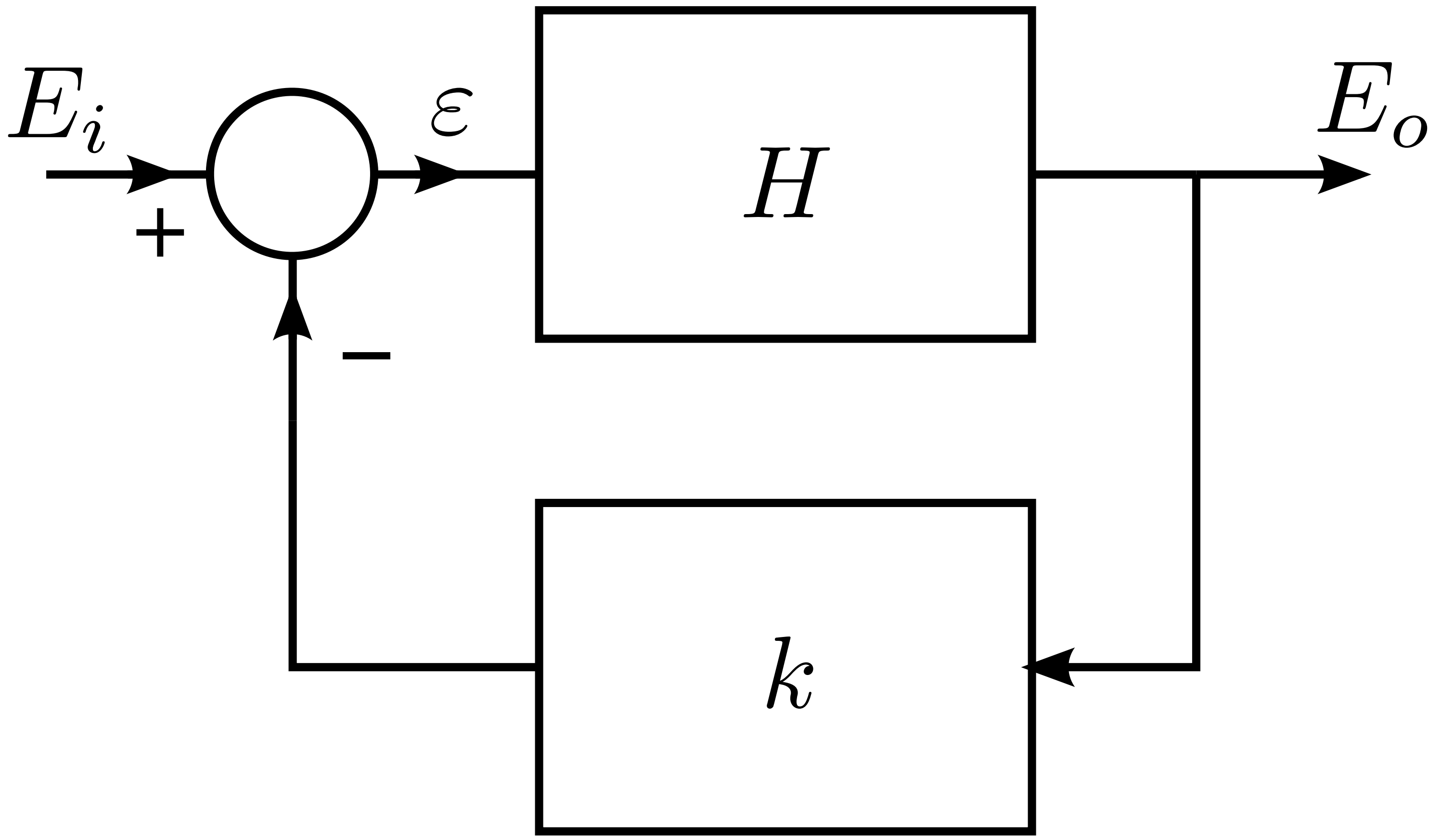
Black's feedback model, assumptions



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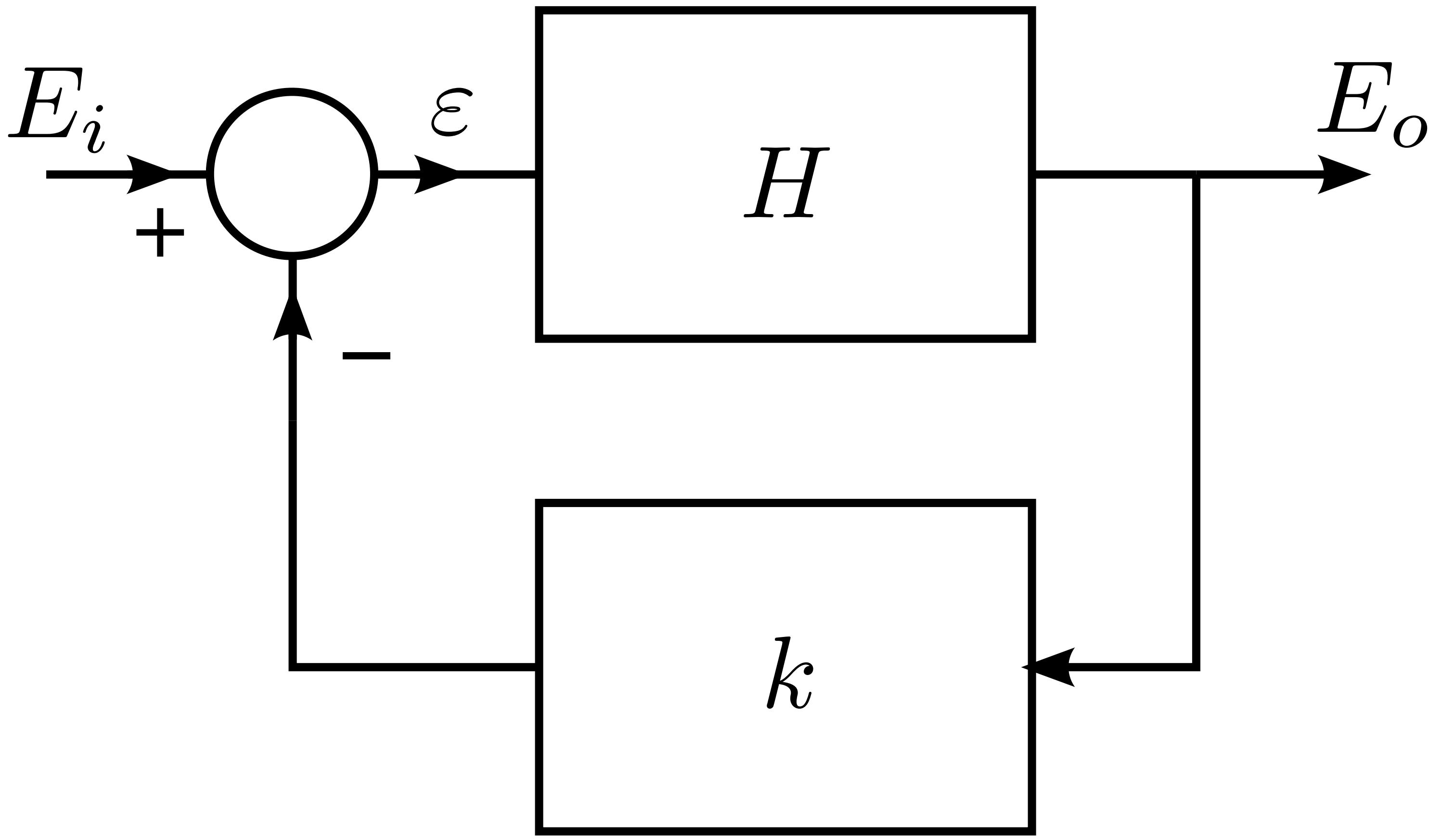

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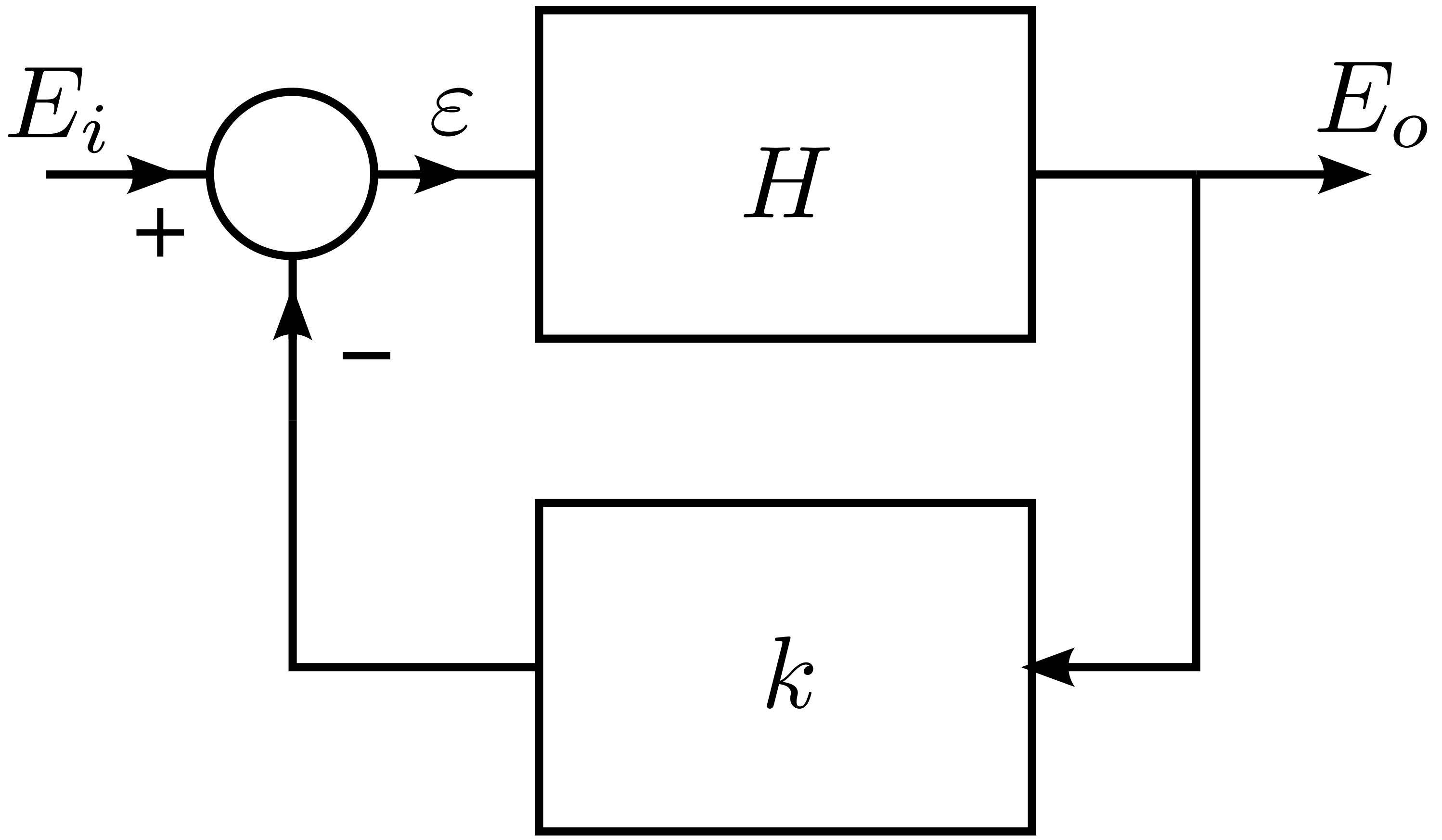

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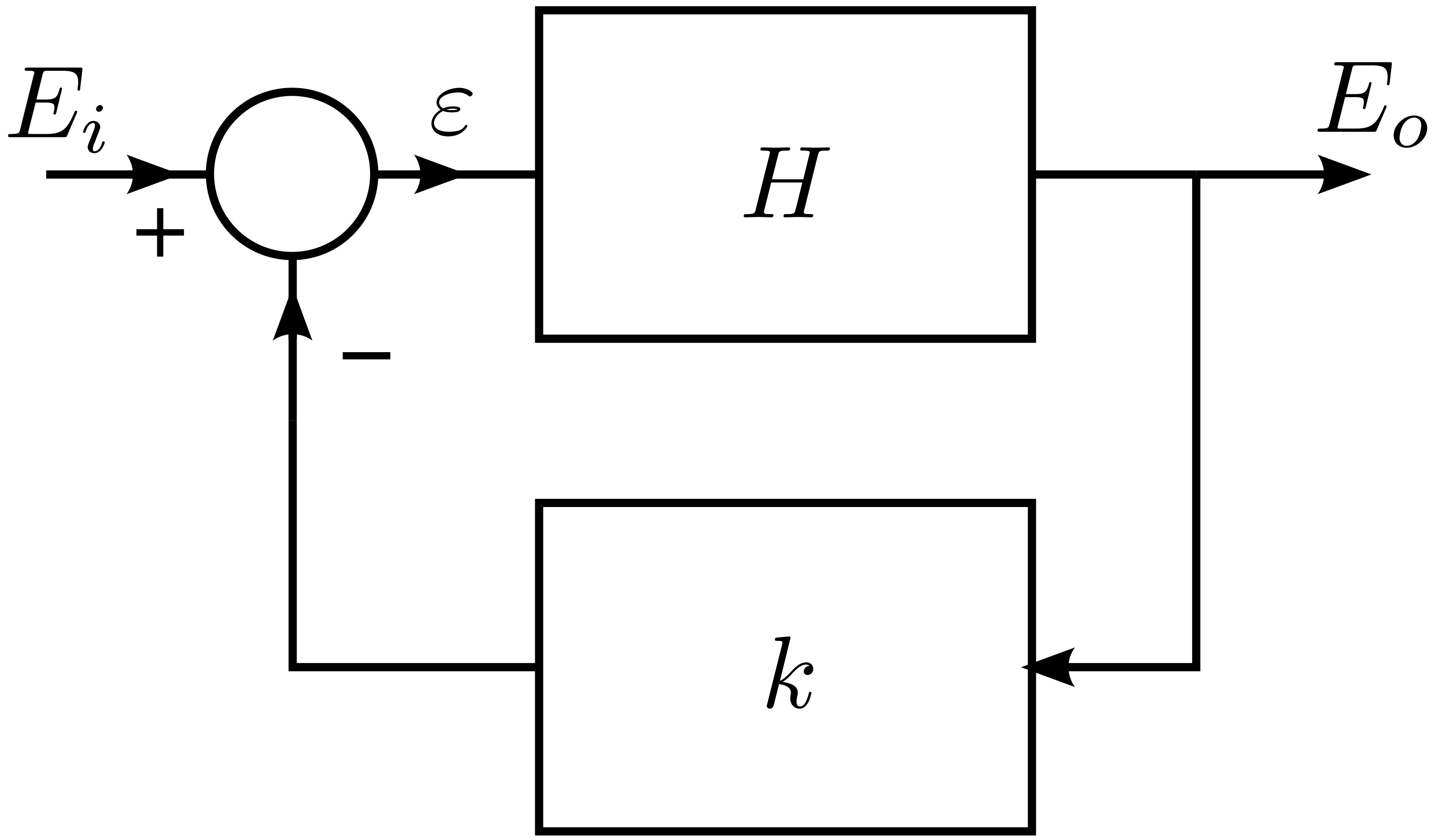

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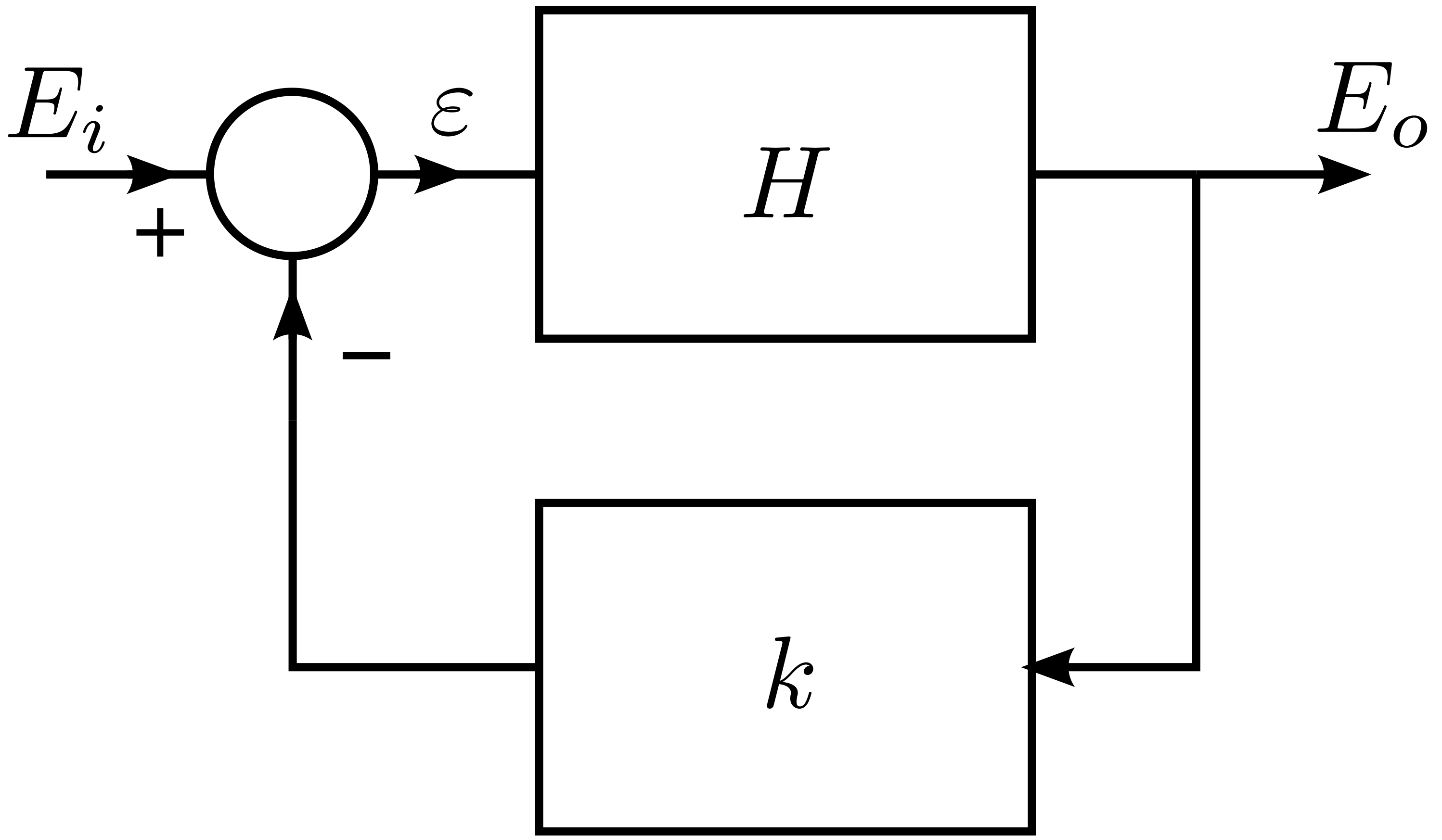

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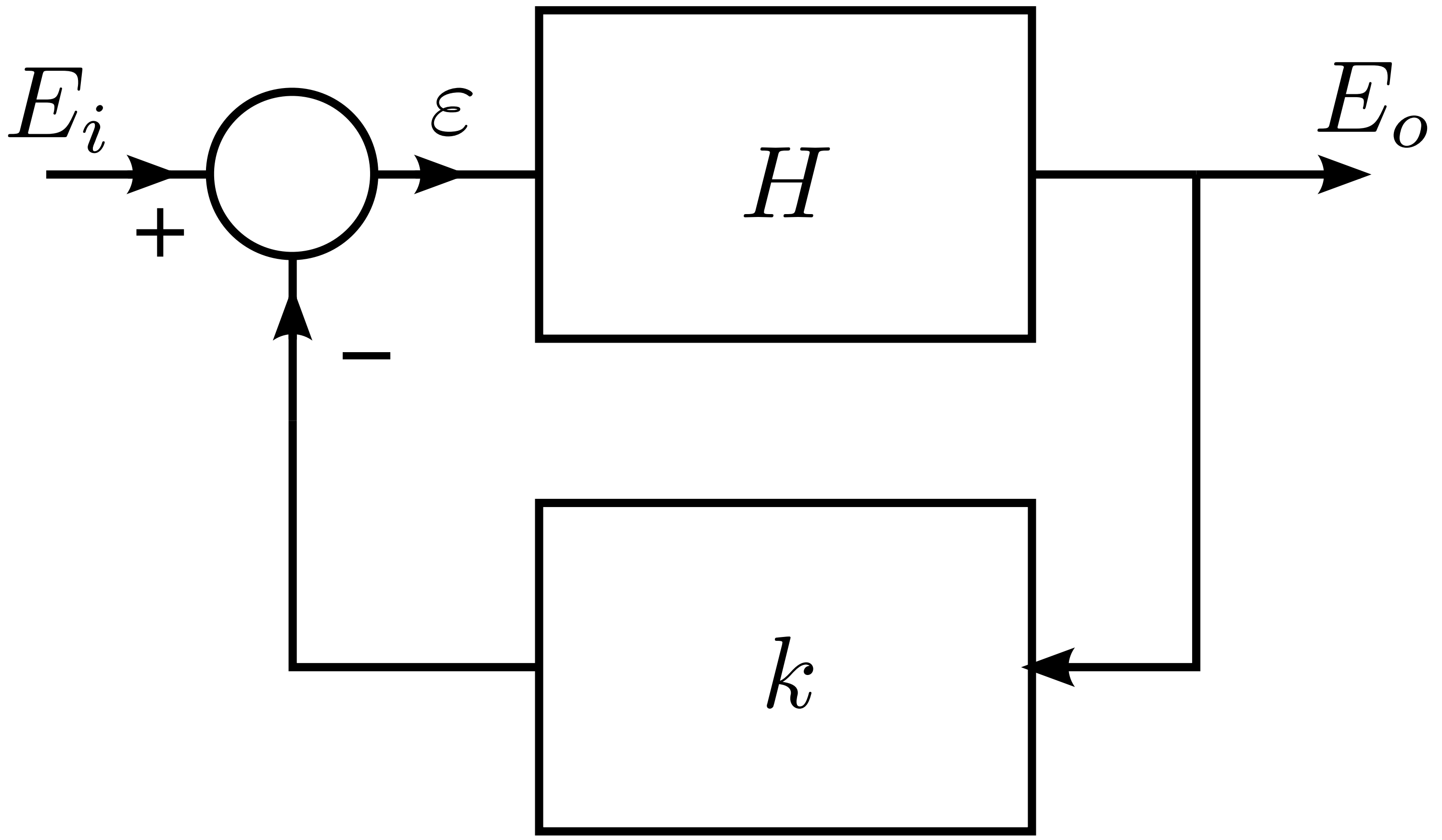

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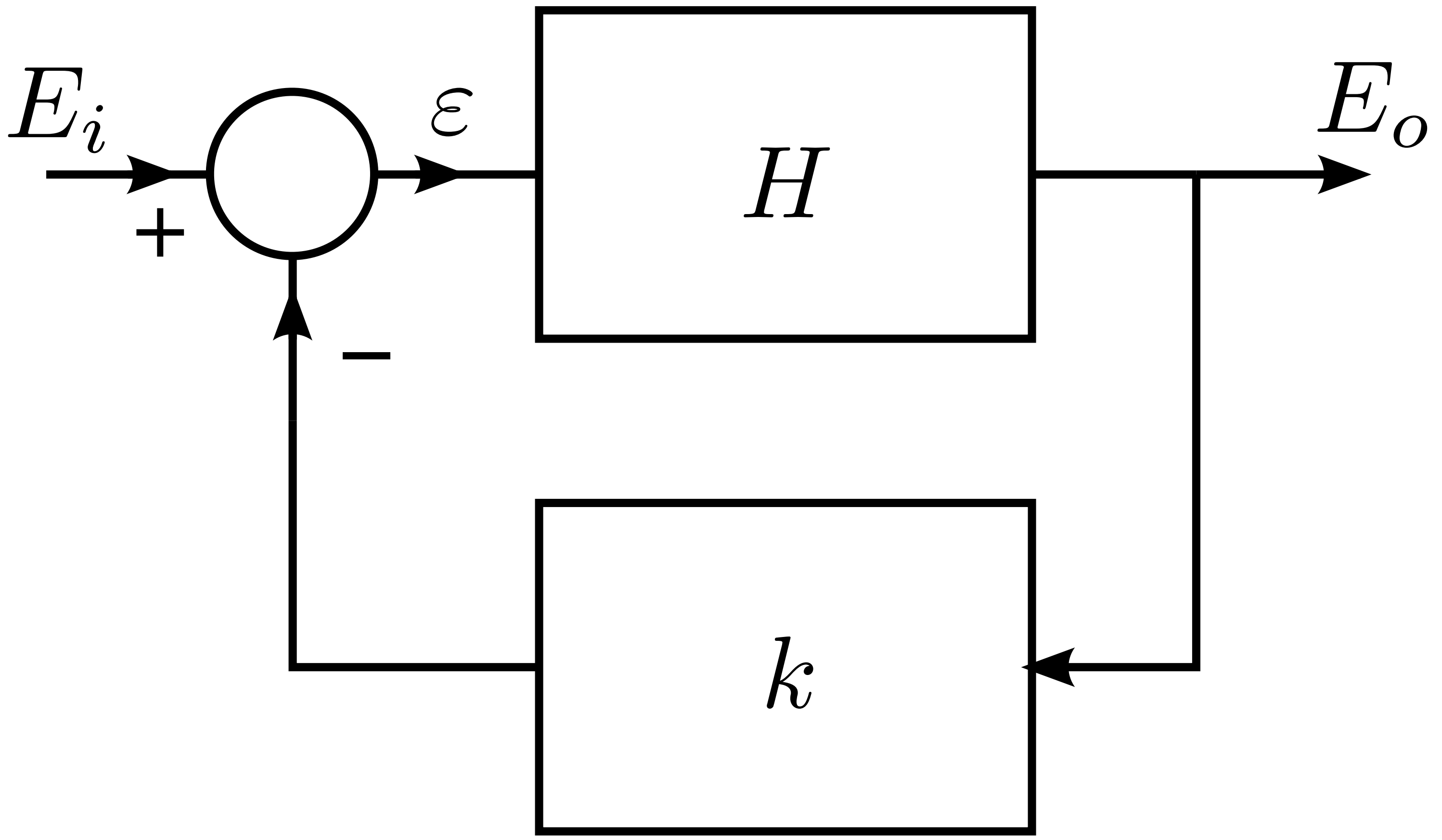

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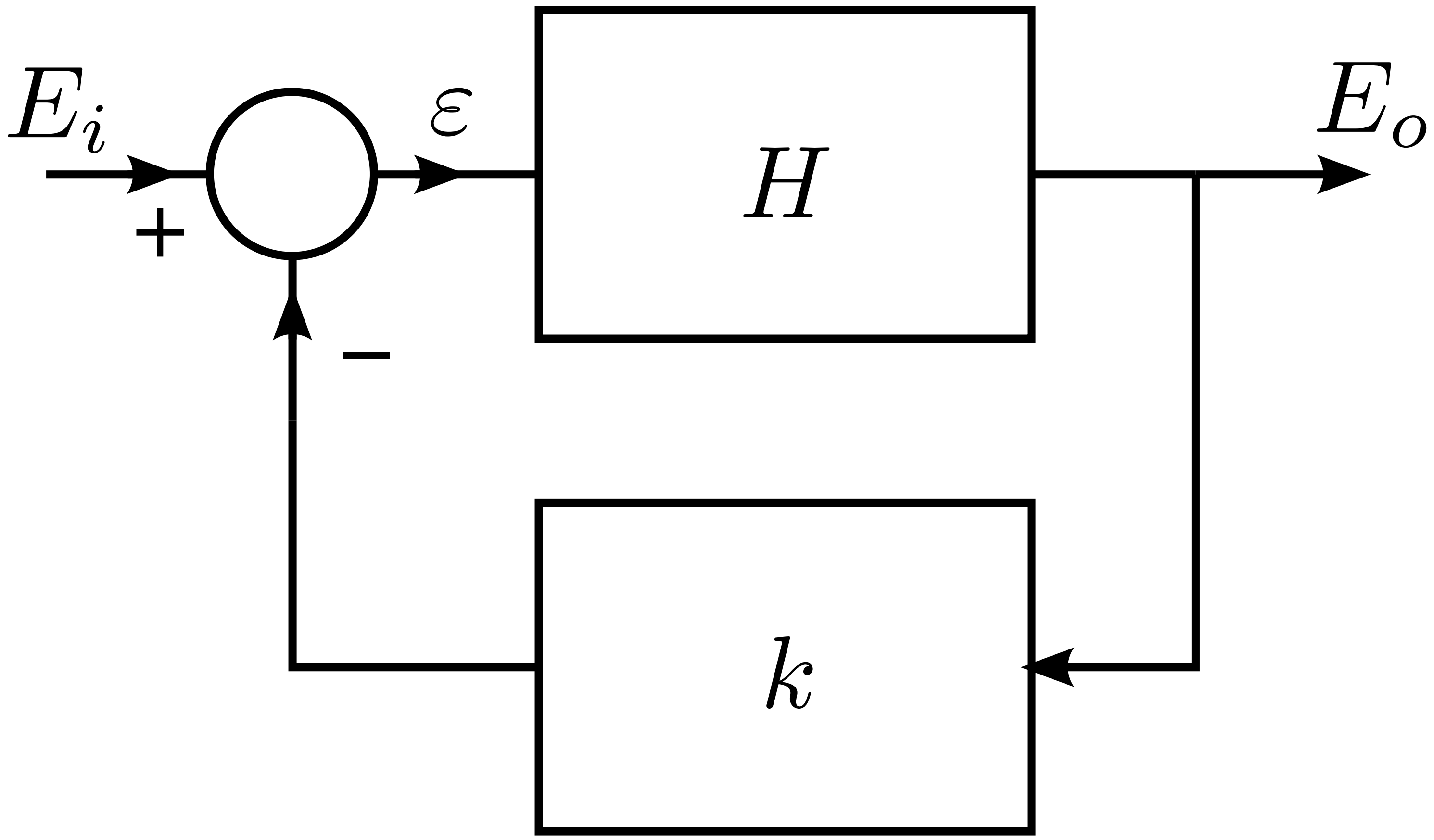

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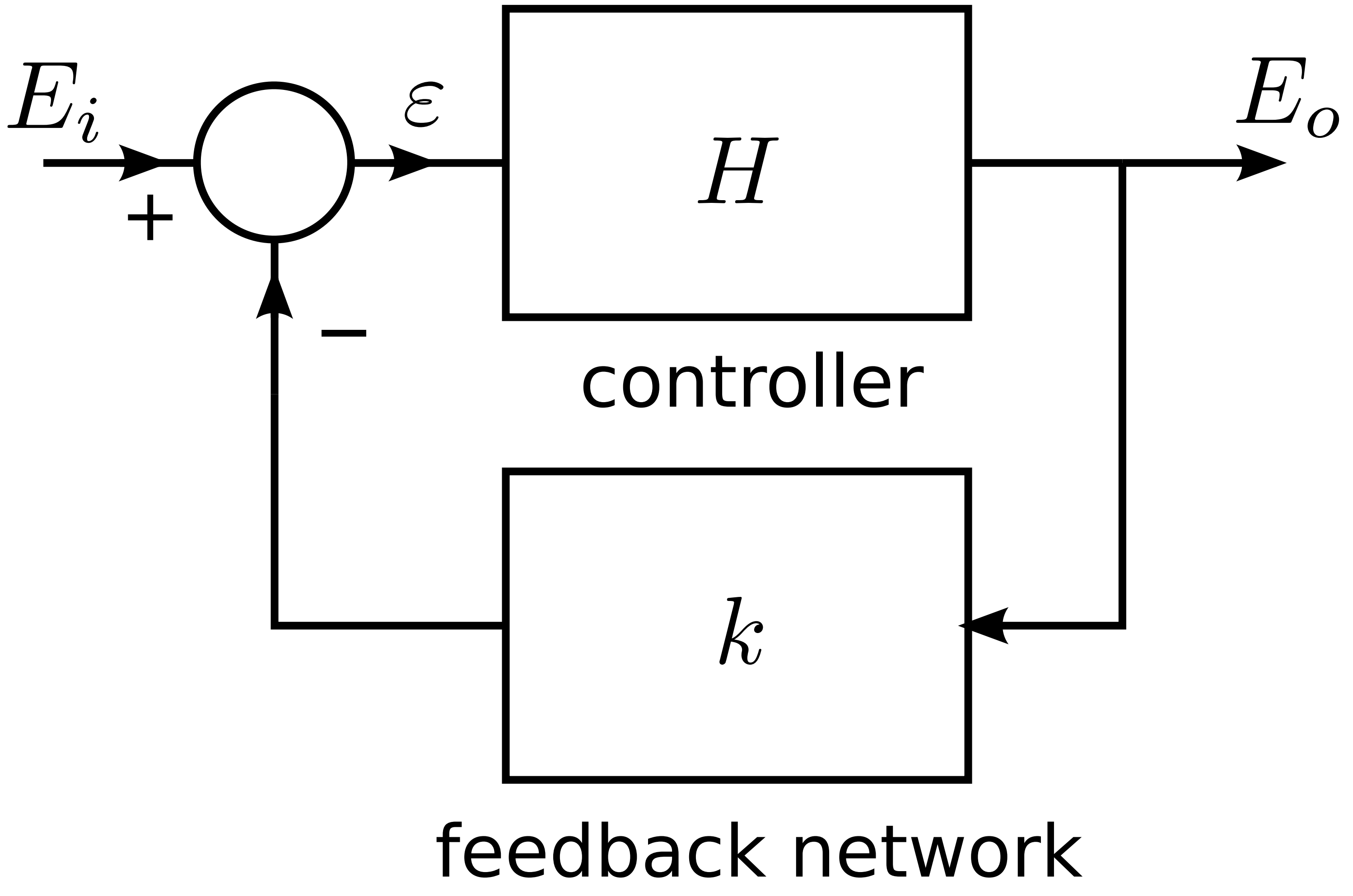

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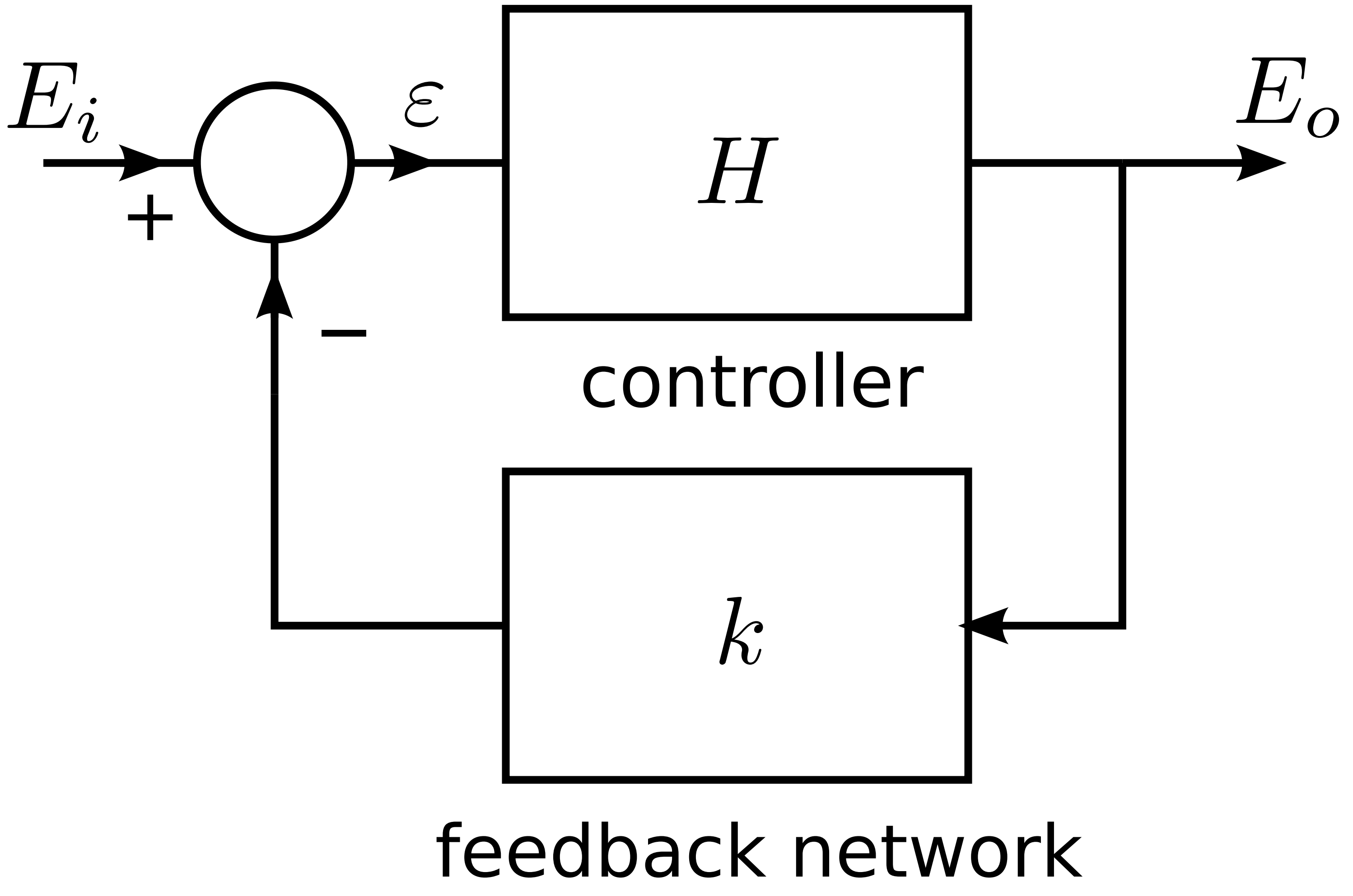

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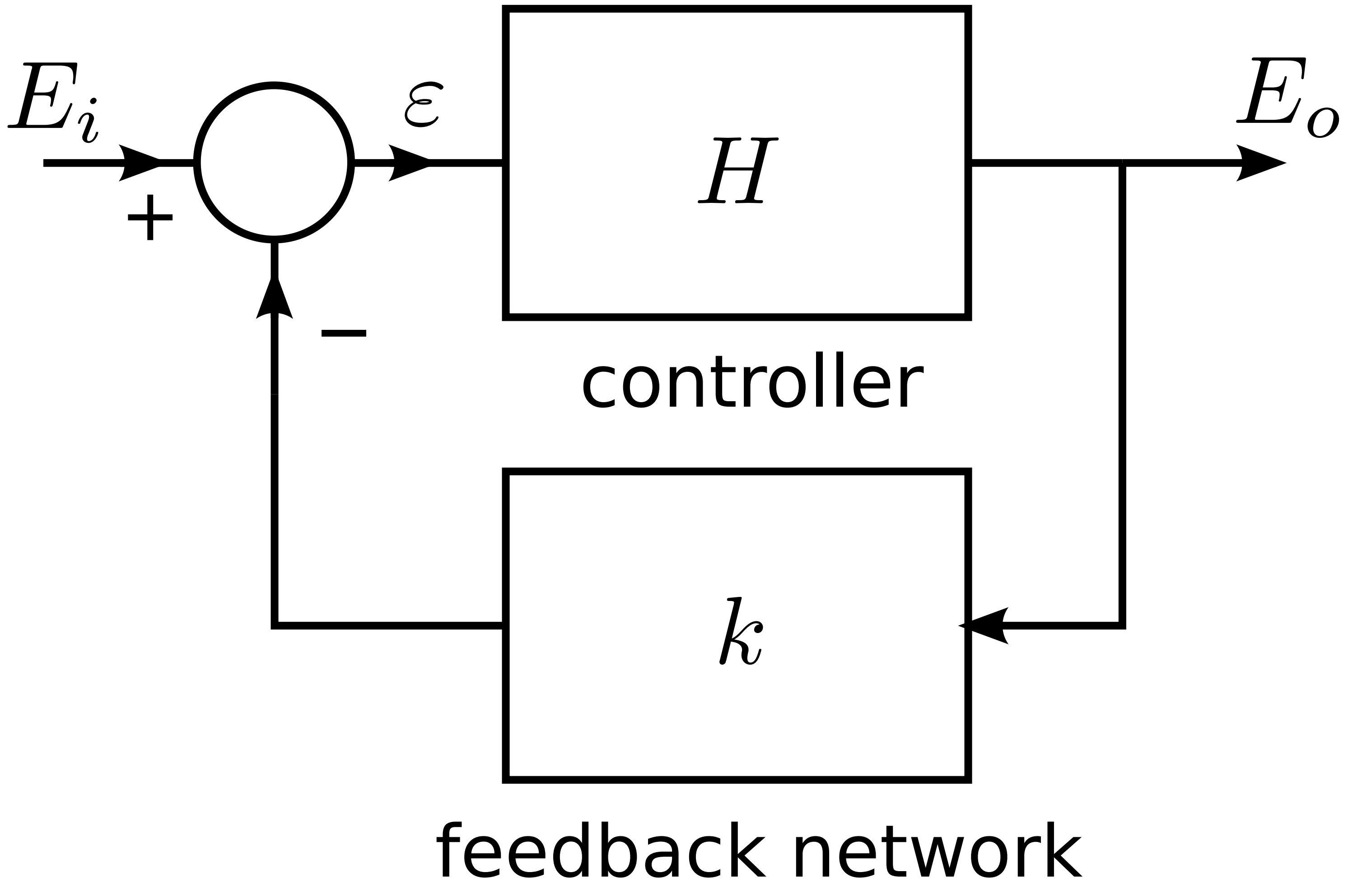

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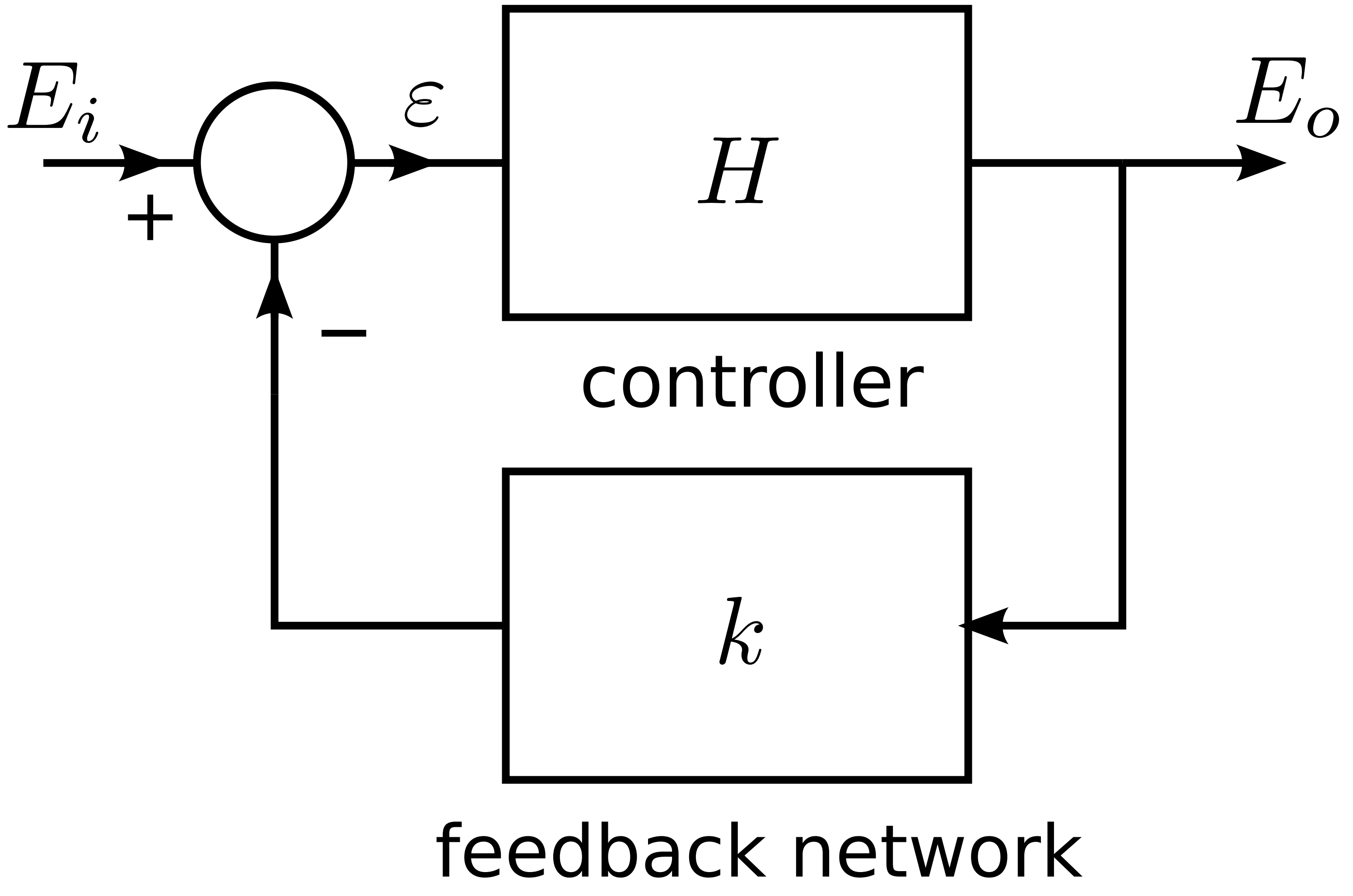

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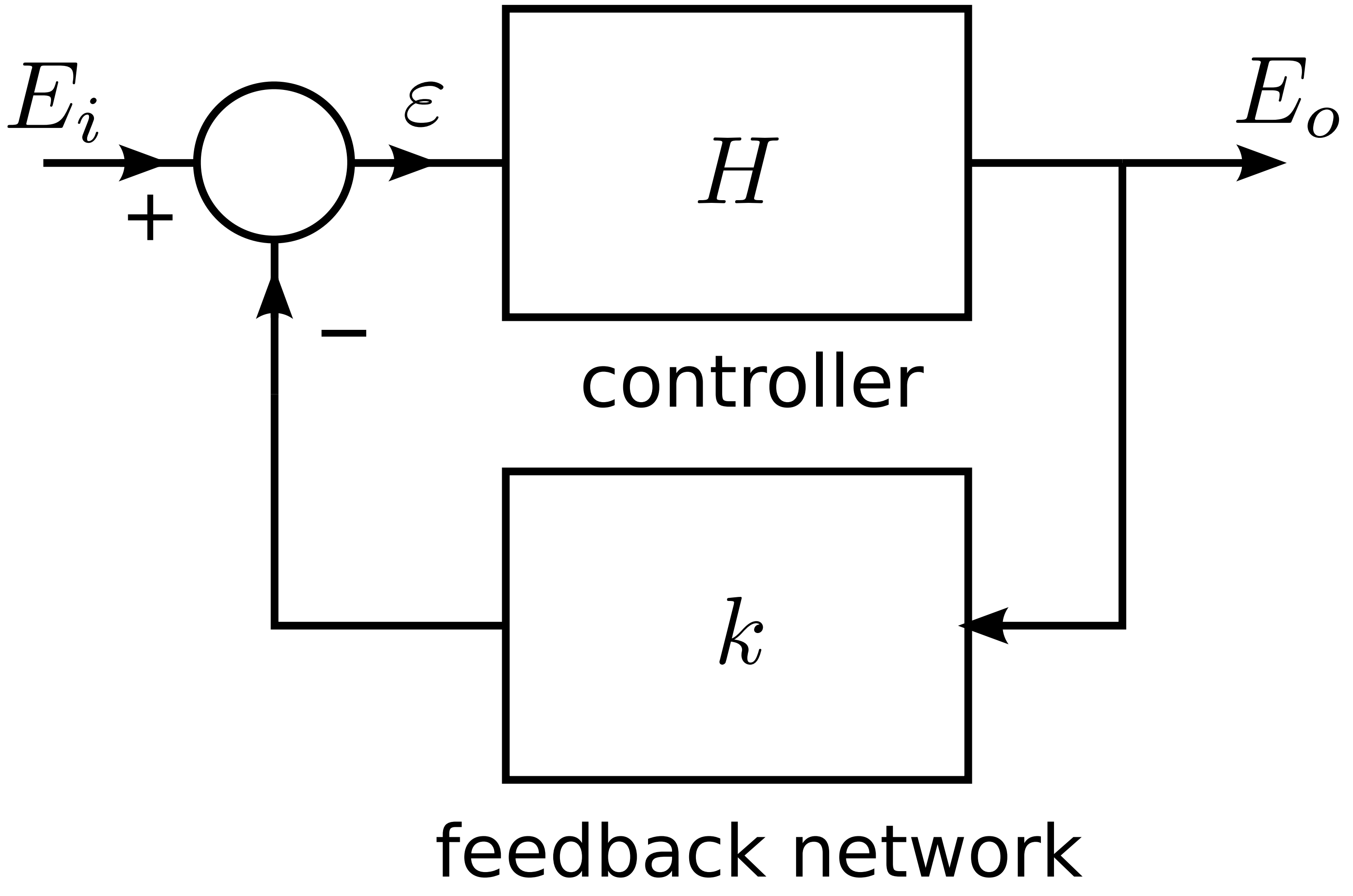

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See example 10.1 and 10.2

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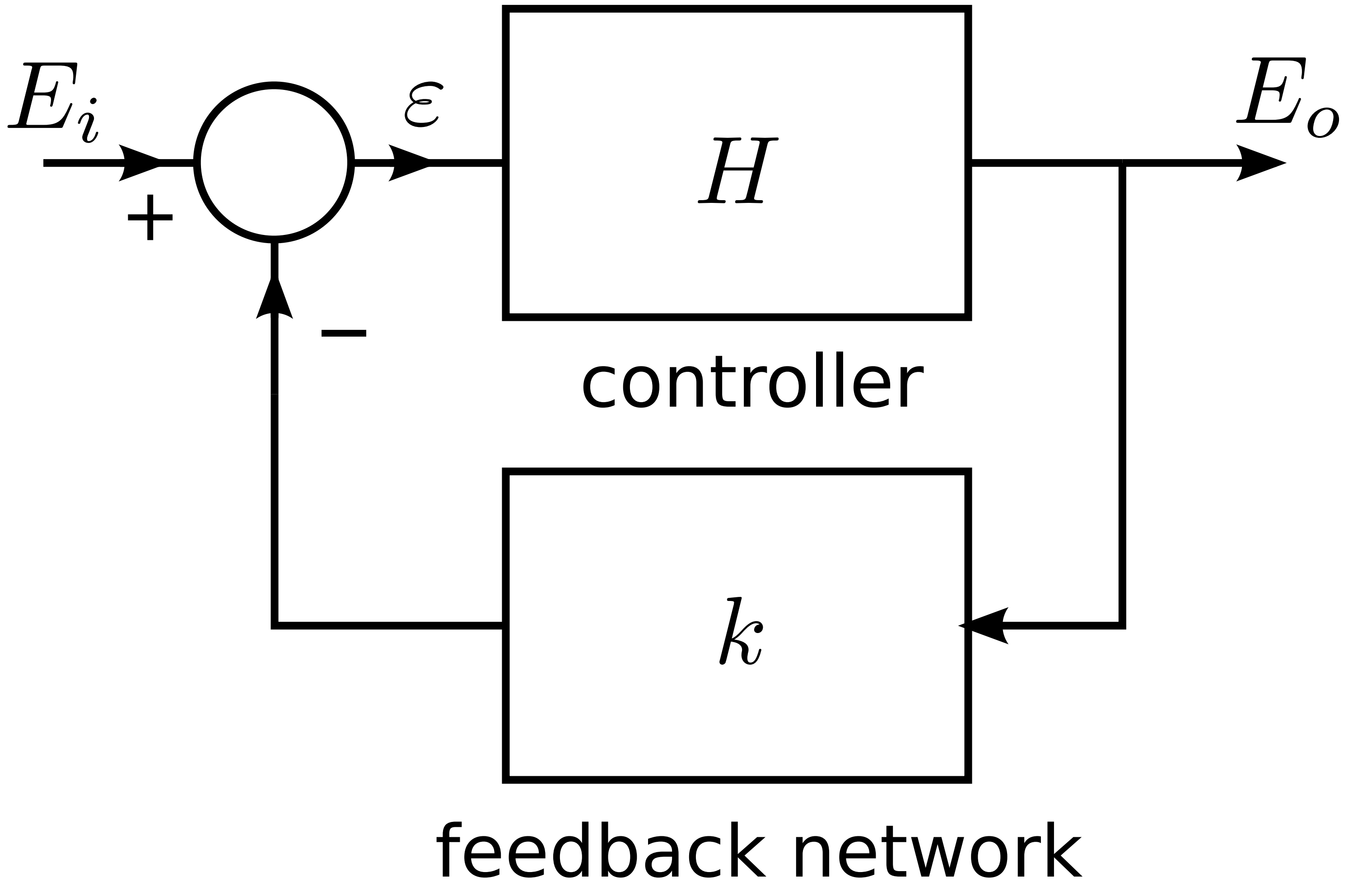

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