

# Upravljanje brzinom motora jednosmerne struje primenom analogne negativne povratne sprege

Diplomski rad

David Milovanović

Univerzitet u Beogradu  
Elektrotehnički fakultet

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# Pregled

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## 1. Teorijski uvod

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- 1.2 Motor stalne struje
- 1.3 Rotacioni enkoder
- 1.4 Negativna povratna sprega
- 1.5 Regulatori
- 1.6 Pojačavači snage

## 2. Karakteristike korišćenih komponenti

## 3. Second Section

# Sistemi automatskog upravljanja

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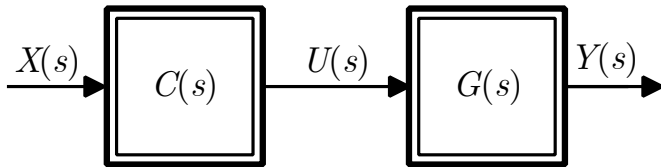


Figure: Opšta blok šema sistema automatskog upravljanja.

# Motor stalne struje

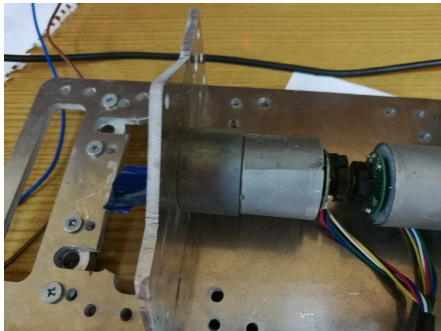


Figure: Motor stalne struje.

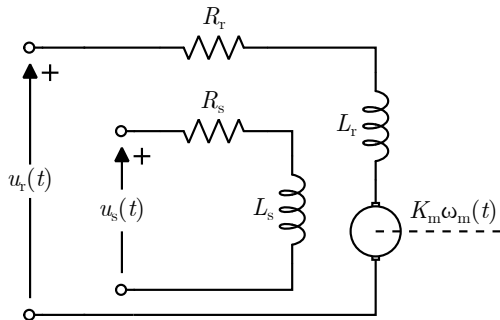


Figure: Model motora stalne struje.

# Rotazioni enkoder

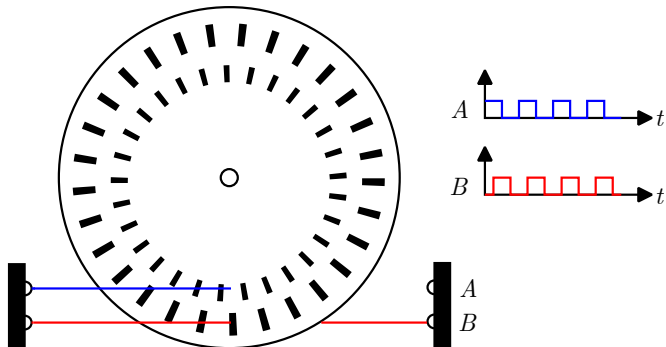


Figure: Rotazioni enkoder.

# Negativna povratna sprega

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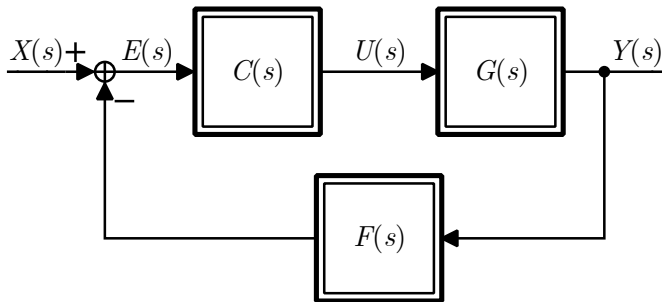


Figure: Opšta blok šema sistema sa negativnom povratnom spregom.

# P regulator

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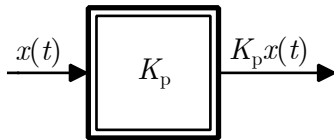


Figure: Opšta blok šema P regulatora.

# Bang-bang regulator

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$$K_p \rightarrow \infty$$

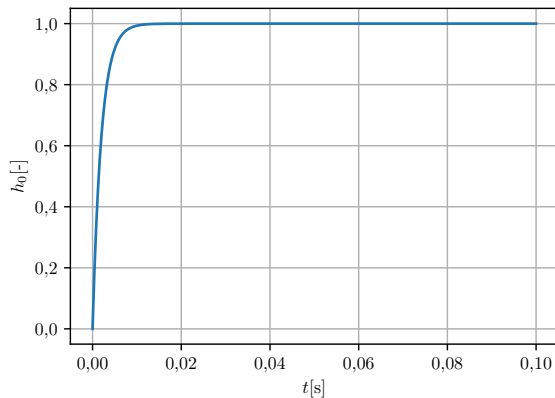


Figure: Očekivani napon na izlazu bang-bang regulatora.



# PI regulator

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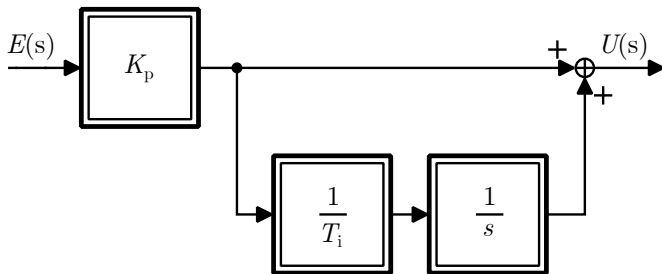


Figure: Opšta blok šema sistema sa PI regulatorom.

# Pojačavači snage

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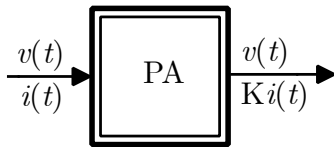


Figure: Opšta blok šema sistema sa negativnom povratnom spregom.

# Pojačavač snage u klasi B

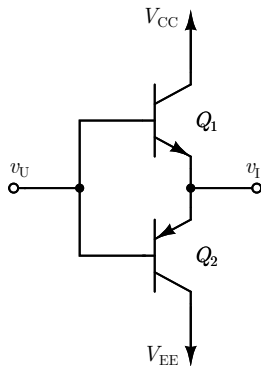


Figure: Pojačavač snage u klasi B.

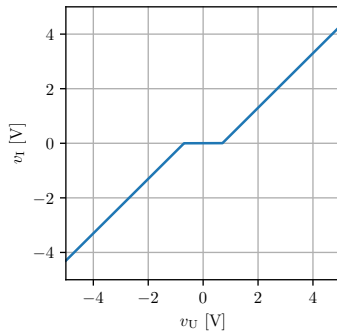


Figure: Jednosmerna prenosna karakteristika.

# Pojačavač snage u klasi AB

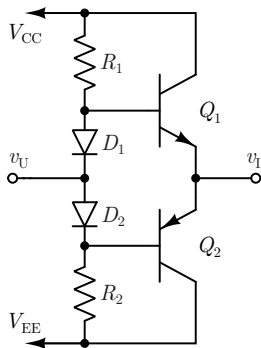


Figure: Pojačavač snage u klasi B.

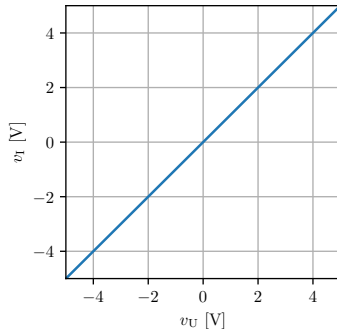


Figure: Jednosmerna prenosna karakteristika.

# Merenje karakteristike motora

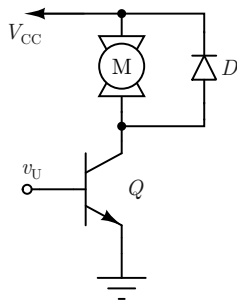


Figure: Električna šema za testiranje motora.

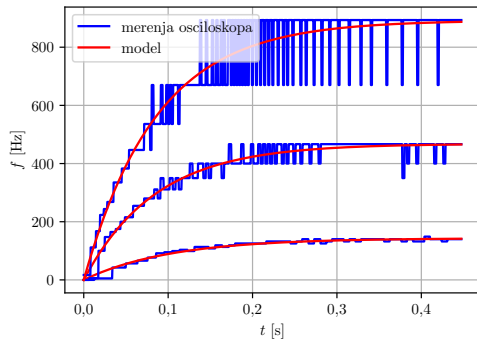


Figure: Grafik preklapljenih izmerenih i modela karakteristike motora.

# Greška merenja

$$\frac{\delta f}{f} = \frac{f \delta f}{1 - (f \delta f)^2}$$

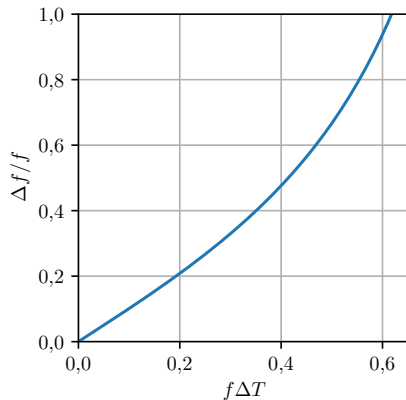


Figure: Odnos normalizovane relativne greške u odnosu na normalizovanu frekvenciju.

# Multiple Columns

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## Heading

1. Statement
2. Explanation
3. Example

Lorem ipsum dolor sit amet, consectetur adipiscing elit. Integer lectus nisl, ultricies in feugiat rutrum, porttitor sit amet augue. Aliquam ut tortor mauris. Sed volutpat ante purus, quis accumsan dolor.

# Table

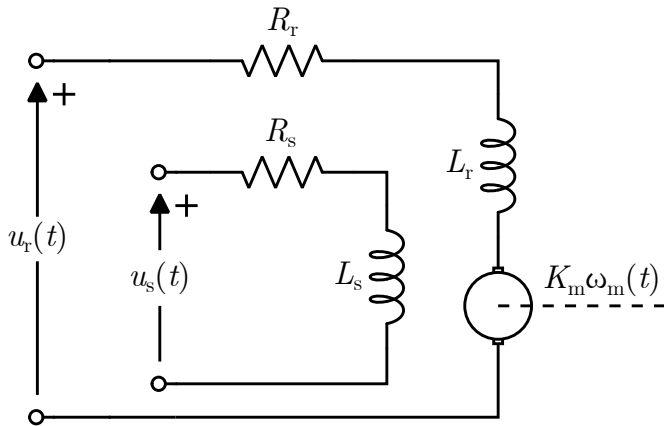
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Treatments	Response 1	Response 2
Treatment 1	0.0003262	0.562
Treatment 2	0.0015681	0.910
Treatment 3	0.0009271	0.296

Table: Table caption



# Figure



# Citation

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An example of the `\cite` command to cite within the presentation:

This statement requires citation [Smith, 2012].

# References

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John Smith (2012)

Title of the publication

*Journal Name* 12(3), 45 – 678.

# The End