# Regulacija odziva bioloških oscilatorjev

Uredila doc. dr. Miha Moškon in prof. dr. Miha Mraz

Januar, 2020

# **Predgovor**

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Biološki oscilatorji imajo pomembno vlogo pri regulaciji bioloških procesov, med katere sodi tudi prilagajanje organizma na nočno-dnevni cikel preko *cirkadiane ure*. Po drugi strani oscilatorji predstavljajo pomemben gradnik pri izvedbi procesnih struktur, saj omogočajo sinhronizacijo ostalih gradnikov in s tem izvedbo sinhronih sekvenčnih vezij. Biološki oscilatorji so torej pomembni tako z analitičnega, kot tudi s sinteznega vidika. V seminarski nalogi se boste osredotočili na analizo modelov biološkega oscilatorja, t. i. represilatorja, in zmožnostmi njegovega usklajevanja bodisi z dodatnimi regulatornimi elementi bodisi z zunanjimi dražljaji.

Ljubljana, januar, 2020 doc. dr. Miha Moškon prof. dr. Miha Mraz

# Zahvala

TODO

doc. dr. Miha Moškon in prof. dr. Miha Mraz, Ljubljana, januar 2020

# Kazalo

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Name of First Author

Name, Address of Institute, e-mail: name@email.address

Name of Second Author

Name, Address of Institute e-mail: name@email.address

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however, for multiline equations we recommend to use the eqnarray environment  $^{1}$ .

$$a \times b = c$$

$$\mathbf{a} \cdot \mathbf{b} = \mathbf{c}$$
(1.2)

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Tabela 1.1 Please write your table caption here

Classes	Subclass	Length	Action Mechanism
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Translation	mRNA	21–22	mRNA cleavage
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**Theorem 1.1.** Theorem text goes here.

**Definition 1.1.** Definition text goes here.

*Dokaz.* Proof text goes here.  $\Box$ 

### Paragraph Heading

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# **Appendix**

When placed at the end of a chapter or contribution (as opposed to at the end of the book), the numbering of tables, figures, and equations in the appendix section continues on from that in the main text. Hence please *do not* use the appendix command when writing an appendix at the end of your chapter or contribution. If there is only one the appendix is designated "Appendix", or "Appendix 1", or "Appendix 2", etc. if there is more than one.

$$a \times b = c \tag{1.3}$$

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Name of Second Author

Name, Address of Institute e-mail: name@email.address

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Use the standard equation environment to typeset your equations, e.g.

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however, for multiline equations we recommend to use the eqnarray environment  $^{1}$ .

$$a \times b = c$$

$$\mathbf{a} \cdot \mathbf{b} = \mathbf{c}$$
(2.2)

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**Definition 2.1.** Definition text goes here.

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$$a \times b = c \tag{2.3}$$

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Name, Address of Institute, e-mail: name@email.address

Name of Second Author

Name, Address of Institute e-mail: name@email.address

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# **Appendix**

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$$a \times b = c \tag{3.3}$$

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Name of Second Author

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Use the standard equation environment to typeset your equations, e.g.

$$a \times b = c \,, \tag{4.1}$$

however, for multiline equations we recommend to use the eqnarray environment  $^{1}$ .

$$\mathbf{a} \times \mathbf{b} = \mathbf{c}$$
$$\mathbf{a} \cdot \mathbf{b} = \mathbf{c} \tag{4.2}$$

### 4.2.1 Subsection Heading

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### 4.2.1.1 Subsubsection Heading

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<sup>&</sup>lt;sup>1</sup> In physics texts please activate the class option vecphys to depict your vectors in **boldface-italic** type - as is customary for a wide range of physical subjects

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- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.
  - a. Livelihood and survival mobility are oftentimes coutcomes of uneven socioe-conomic development.
  - b. Livelihood and survival mobility are oftentimes coutcomes of uneven socioe-conomic development.
- 2. Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.

### Subparagraph Heading

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- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development, cf. Table 4.1.
  - Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.

Slika 4.1 If the width of the figure is less than 7.8 cm use the sidecapion command to flush the caption on the left side of the page. If the figure is positioned at the top of the page, align the sidecaption with the top of the figure – to achieve this you simply need to use the optional argument [t] with the sidecaption command

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- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.
- Livelihood and survival mobility are oftentimes coutcomes of uneven socioeconomic development.

**Run-in Heading Boldface Version** Use the LATEX automatism for all your cross-references and citations as has already been described in Sect. 4.2.

Run-in Heading Italic Version Use the LATEX automatism for all your cross-references and citations as has already been described in Sect. 4.2.

Tabela 4.1 Please write your table caption here

Classes	Subclass	Length	Action Mechanism
Translation	mRNA <sup>a</sup>	22 (19–25)	Translation repression, mRNA cleavage
Translation	mRNA cleavage	21	mRNA cleavage
Translation	mRNA	21–22	mRNA cleavage
Translation	mRNA	24–26	Histone and DNA Modification

<sup>&</sup>lt;sup>a</sup> Table foot note (with superscript)

# 4.3 Section Heading

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- Type 1 That addresses central themes pertaining to migration, health, and disease. In Sect. 4.1, Wilson discusses the role of human migration in infectious disease distributions and patterns.
- Type 2 That addresses central themes pertaining to migration, health, and disease. In Sect. 4.2.1, Wilson discusses the role of human migration in infectious disease distributions and patterns.

# 4.3.1 Subsection Heading

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### 4.3.1.1 Subsubsection Heading

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Theorem 4.1. Theorem text goes here.

**Definition 4.1.** Definition text goes here.

*Dokaz.* Proof text goes here.  $\Box$ 

### Paragraph Heading

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**Theorem 4.2.** Theorem text goes here.

**Definition 4.2.** Definition text goes here.

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$$a \times b = c \tag{4.3}$$

# Literatura

1. M. Stražar, M. Mraz, N. Zimic, and M. Moškon., "An adaptive genetic algorithm for parameter estimation of biological oscillator models to achieve target quantitative system response," *Natural Computing*, no. 13, pp. 119–127, 2014.