Book of abstracts of the 7th International Conference
on Advanced Computational Methods
in Engineering, ACOMEN 2017
18–22 September 2017.

LaTeX Template for the ACOMEN extended abstract and Instructions for Authors

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Abstract

The present sample contains information on preparation of the extended abstracts of the 6th International Conference on Advanced Computational Methods in Engineering, ACOMEN 2017, to be held from 18 to 22 September 2017 in Ghent, Belgium. The abstract should contain the most important information about the paper. Please avoid citations and symbols other than normal text.

Key words: provide up to five keywords alphabetically ordered, separated by comma
MSC 2010: Mathematics Subject Classification, separated by comma (optional)

1 Introduction

This file is a LaTeX2$_\varepsilon$ template for the book of abstracts of ACOMEN 2017. Remember the maximum number of pages: 2 for a short contribution, 4 for a plenary lecture. Please prepare your contribution in English without page numbers. It is important to use the class-file `acomen17.cls` without any alterations.

Mind the difference between the math 2017 and the text 2017. Make sure hyphenations are done correctly and sentences are grammatically sound.

2 More

In [1] it is shown that

$$E_{\mathrm{K}} = \frac{RT}{zF} \ln \frac{[\mathrm{K}^+]_{\mathrm{out}}}{[\mathrm{K}^+]_{\mathrm{in}}}, \tag{1}$$

where R is the gas constant, T the absolute temperature in kelvin, z the valence of K^+, F is Faraday's constant, and $[K^+]_{\mathrm{in}}$ and $[K^+]_{\mathrm{out}}$ are the concentrations of K^+ inside and outside the cell. A generalization of this equation including sodium, potassium and chloride is the *Goldman-Hodgkin-Katz equation* which reads

$$E_{\mathrm{K}} = \frac{RT}{F} \ln \frac{P_{\mathrm{K}}[\mathrm{K}^+]_{\mathrm{out}} + P_{\mathrm{Na}}[\mathrm{Na}^+]_{\mathrm{out}} + P_{\mathrm{Cl}}[\mathrm{Cl}^-]_{\mathrm{in}}}{P_{\mathrm{K}}[\mathrm{K}^+]_{\mathrm{in}} + P_{\mathrm{Na}}[\mathrm{Na}^+]_{\mathrm{in}} + P_{\mathrm{Cl}}[\mathrm{Cl}^-]_{\mathrm{out}}},$$

where the P_j's are the permeabilities of each of the three ionic species. In Tab. 1 typical ion concentrations and Nernst potentials are listed for a squid axon and a mammalian cell.

Theorem (Gauss-Ostrogradsky) *If* $\mathbf{f}$ *and its first derivative are continuous in the volume* V *as well on its surface* ∂V*, then*

$$\int_V \nabla \cdot \mathbf{f}\, d\mathbf{r} = \int_{\partial V} \mathbf{f} \cdot d\mathbf{s}.$$

3 Tables and Figures

(a) Caption1

(b) Caption2

Figure 1: Main caption.

Table 1: Some ion concentrations and Nernst potentials according to (1).

Ion	Inside (mM)	Outside (mM)	Nernst potential (mV)
Frog muscle			$T = 20°C = 293°K$
K^+	124	2.25	−101
Na^+	10.4	109	+59
Cl^-	1.5	77.5	−99
Squid axon			$T = 20°C = 293°K$
K^+	400	20	−75
Na^+	50	440	+55
Cl^-	40 to 150	560	−66 to −33
Mammalian cell			$T = 37°C = 310°K$
K^+	140	5	−89.7
Na^+	5 to 15	145	+90 to +61
Cl^-	4	110	−89

from Johnston and Wu [2]

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Acknowledgements

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[1] G. Ermentrout, D. Terman, *Mathematical Foundations of Neuroscience*, Springer, 2010.

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