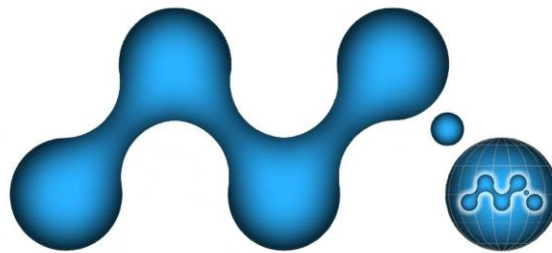


**ACADEMY OF SCIENCE  
THE REPUBLIC OF BASHKORTOSTAN**

**BASHKIR STATE UNIVERSITY**

VIII International youth  
scientific-practical conference

**MATHEMATICAL MODELING OF PROCESSES AND SYSTEMS**



OCTOBER 4 – 7, 2018, UFA, STERLITAMAK

**Dear colleagues!**

**We welcome you to take part in the  
International youth scientific-practical conference  
«Mathematical modeling of processes and systems»**

**The aim** of the scientific-practical conference is to generalize the experience of different scientific teams in an application of methods of modern mathematics, mathematical modelling and IT in scientific studies, attraction of scientific youth to the studies in the prospective fields.

**Participation in the Conference is free of charge!**

Participants' articles are to be published **in the Collection of Scientific Works of the Conference.**

The plenary meeting reports and lectures of outstanding Russian and Foreign scientists on contemporary issues of modern mathematics and its applications as well as discussions of young scientists' works are supposed to take place.

### **Focus Areas of the Conference**

*Section 1.* Mathematical modelling, numerical methods and program complexes.

*Section 2.* Inverse and ill-conditioned problems.

*Section 3.* Non-classical equations of Mathematical Physics and their applications.

*Section 4.* Computing system application in modelling processes in Physics, Chemistry, Biology, Economics, Sociology and Theory of Education.

## Deadline

- till **July 15, 2018** you have to apply to the organizing committee's e-mail: [mmpsbsu@gmail.com](mailto:mmpsbsu@gmail.com) ([kafedrami@mail.ru](mailto:kafedrami@mail.ru)) (topic: conference «MMPS-17») **participation form** for the conference (follow the five form) and reports texts on the conference topics in the form of a doc-file with the title, like: *SurnameI* of the first author and in a symbol underlining the section number (**SmithM\_1.doc, participation form\_SmithM\_1.doc**)
- till **August 19, 2018** notification message will be posted to confirm the materials acceptance and the introduction of the article into the program of the conference together with its on-line version.

## Requirements to the Article Submission

**Up to 5 pages** articles can be submitted, in **MS WORD 2003**. *Page size*: landscape paper orientation, 2 pages on a sheet.

*Edge*: head/bottom – 2,5 sm, outside/inside – 2,1 sm. *Print*: 10 primer, Times New Roman, for references– 9. *Paragraph*: single line space, first line indent 0,75 sm; pictures and tables are inserted into the text; automatic hyphenation; no page numeration.

*Formulas* are printed in MS Equation.

The initial line on the left is UDC, the second line is Surnames of the authors in semi-bold in the center, the third – title of the article in the center in semi-bold capital letters. Further in italics – abstract to the article (no more than 5 lines) and key words (**formulas and special symbols** are not allowed).

References are given in accordance with the sample in an alphabetic order. References to the corresponding source are to be given in the text in square brackets. Automatic page references are not allowed.

The article should be edited in a proper way. All the materials are published in the authors' edition. The authors are responsible for the authenticity of the papers materials.

### Participation Form (for each article)

1. Author's (Authors') Full name (in English)	
2. Title of the article (in English)	
3. Universal Decimal Classification (UDC)	
4. Key-words to the article (in English)	
5. abstract to the article (in English)	
6. Author's (Authors') place of work (country, city, institution) (in English)	
7. Author's (Authors') academic status, position (no abbreviation is allowed) (in English)	
8. Contacts (E-mail, phones)	
9. References (in English)	

There cannot be any divergences in the names, abstract, key words, title in the Participation form and the article itself.

## Sample article

UDC 519.245:678.7

Mikhailova T.A., Miftakhov E.N.

**MATHEMATICAL MODELLING OF BUTADIENE-STYRENE COPOLYMERIZATION PROCESS IN  
THE CASCADE OF REACTORS ON THE MONTE-CARLO METHOD**

*Algorithm of modelling of free-radical butadiene-styrene copolymerization process in the cascade of reactors has been built in the paper.*

*Key words: copolymerization, butadiene, styrene, Monte-Carlo method.*

In the production of synthetic rubbers there are the processes of polymerization and polycondensation. The most popular are butadiene-styrene rubbers which are the product of a free-radical copolymerization process of butadiene with in the emulsion.

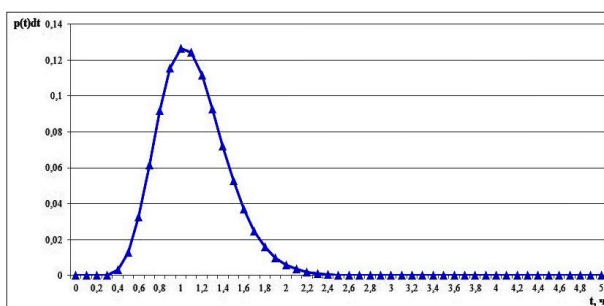
For the cascade of reactors of an ideal mixture of a constant activity the certainty value  $p(t)$  of the particle's being in the system is calculated according to the formula [2]:

$$p(t) = \left(\frac{n}{\tau}\right)^n \frac{t^{n-1}}{(n-1)!} e^{-\frac{nt}{\tau}}, \quad (1)$$

where  $n$  – number of reactors in the system,  $\tau$  – average time of reaction mixture being in one reactor (h).

Pic. 1 demonstrate the distribution of the product's particles according to the time of being for the battery of 12 polymerizers with the volume of  $V = 10 \text{ m}^3$  with the volume of stream velocity  $Cf = 9,5982 \text{ m}^3/\text{h}$ . In this case the average time of reaction mixture being in one polymerizer is  $V/Cf = 1.125 \text{ h}$ , which the curve's top corresponds to..

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Pic. 1. Distribution according to the time of particles' being in the system

### References

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2. Rawlings J. B., Ekerdt J. G. Chemical Reactor Analysis and Design Fundamentals. Madison: Nob Hill Publishing, 2002. PP. 609.

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