

# ALEXEY OVCHINNIKOV

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## POSITION

2016 – PRESENT

**PROFESSOR**, CUNY QUEENS COLLEGE

2016 – PRESENT

**DOCTORAL FACULTY**, CUNY GRADUATE CENTER, PH.D. PROGRAM IN CS

2013 – 2016

**ASSOCIATE PROFESSOR**, CUNY QUEENS COLLEGE

2012 – PRESENT

**DOCTORAL FACULTY**, CUNY GRADUATE CENTER, PH.D. PROGRAM IN MATHEMATICS

2009 – 2013

**ASSISTANT PROFESSOR**, CUNY QUEENS COLLEGE

2007 – 2009

**RESEARCH ASSISTANT PROFESSOR**, UNIVERSITY OF ILLINOIS AT CHICAGO

## EDUCATION

2004 – 2007

**PH.D. IN MATHEMATICS**, NC STATE UNIVERSITY

Advisor: M.F. Singer

2004 – 2008

**PH.D. IN MATHEMATICS**, MOSCOW STATE UNIVERSITY

Advisor: E.V. Pankratiev

1999 – 2004

**DIPLOMA IN MATHEMATICS AND APPLIED MATHEMATICS**, MOSCOW STATE UNIVERSITY

Advisor: E.V. Pankratiev

## PUBLICATIONS

40 peer-reviewed publications and 5 preprints. Few selected publications:

- H. Hong, A. Ovchinnikov, G. Pogudin, and C. Yap, “Global identifiability of differential models,” accepted for publication in *Communications on Pure and Applied Mathematics* (2020), 50 pages
- C. Hardouin, A. Minchenko, and A. Ovchinnikov, “Calculating Galois groups of differential equations with parameters and hypertranscendence,” *Mathematische Annalen* **368** (1) (2017) 587-632
- R. Gustavson, M. Kondratieva, and A. Ovchinnikov, “New effective differential Nullstellensatz,” *Advances in Mathematics* **290** (2016) 1138-1158

## AWARDS/HONORS

Approximately \$2,000,000 in grants and awards as the principal investigator. The awards include:

- National Science Foundation CAREER Award
- Alfred P. Sloan Foundation CUNY Junior Faculty Award

## EDITORIAL BOARDS

2020 – PRESENT

**EDITORIAL BOARD MEMBER**, JOURNAL OF SYMBOLIC COMPUTATION

2016 – PRESENT

**EDITORIAL BOARD MEMBER**, ADVANCES IN APPLIED MATHEMATICS

2018 – 2019

**GUEST EDITOR**, JOURNAL OF SYMBOLIC COMPUTATION

ISSAC 2018 special issue

2014-2015

**GUEST EDITOR**, ADVANCES IN APPLIED MATHEMATICS

"Computational aspects of differential/difference algebra and integral operators" (ACA 2014) special issue

## RECENT CONFERENCE AND SEMINAR ORGANIZATION

SUMMER 2022

**MSRI SUMMER GRADUATE SCHOOL**, ORGANIZER

2009 - PRESENT

**KOLCHIN SEMINAR IN DIFFERENTIAL ALGEBRA**, ORGANIZER

2015 - PRESENT

**SYMBOLIC-NUMERIC COMPUTING SEMINAR**, ORGANIZER

FEBRUARY 10-14, 2020

**DIFFERENTIAL ALGEBRA AND RELATED TOPICS X**, LOCAL ORGANIZER

JULY 15-19, 2018

**ISSAC 2018**, GENERAL CO-CHAIR

SEPTEMBER 11-14, 2017

**DIFFERENTIAL ALGEBRA AND RELATED TOPICS VIII**, PC MEMBER

SEPTEMBER 30 - OCTOBER 4, 2016

**DIFFERENTIAL ALGEBRA AND RELATED TOPICS VII**, PC MEMBER

# Vision

## Field of symbolic computation

Symbolic computation could simply be defined as exact computation. The main sub-areas of symbolic computation are described on the journal website

<https://www.journals.elsevier.com/journal-of-symbolic-computation>

Research in symbolic computation benefits from interactions with other research areas. Existing well-developed ideas from other areas (e.g., model theory in the sense of logic, machine learning, analysis, and many other areas) do find new and unexpected uses in symbolic computation. Developing symbolic computation methods to tackle concrete applied problems positively impacts symbolic computation as a research area.

## Scope of the journal

The journal should cover all aspects of the field (from foundations to software development) and also welcome articles that meaningfully compare symbolic computation with other methods, including symbolic-numeric computation and the corresponding software.

## Organization of the journal

### 1) Refereeing:

- a) To organize refereeing, the editor assigns the handling editor, who solicits referee reports.
- b) If a submission is within the scope of the journal, then at least two sufficiently detailed referee reports should be obtained before making a decision.
- c) While inviting referees, the handling editor should aim at receiving commitments from the potential referees within 1 week from receiving the submission from the editor. In the absence of such commitments, the handling editor should contact more potential referees.

### 2) Role of the editor:

- a) Keep track of the submissions
- b) Assign editorial board members to handle submissions
- c) Oversee handling submissions
- d) Handle difficult submissions
- e) Communicate with the publisher
- f) Promote the journal

- 3) Role of the editorial board:
  - a) Handle the refereeing process of submissions
  - b) Provide advice to the editor and vote on issues
- 4) The publishing company is in charge of
  - a) Copyediting
  - b) Distributing accepted submissions
  - c) Maintaining the journal website with the basic information
- 5) Major conferences in symbolic computation (e.g., ISSAC, MEGA, and other meetings) play a key role in live dissemination of results in the area. Given that some institutions might not view publications in rigorously refereed conference proceedings sufficiently highly, the journal should continue its practice to publish special issues related to such conferences. Additionally, special issues of the journal should not be limited to conference special issues but can still be formed around a particular topic in symbolic computation or its relations with other areas.
- 6) Hard copies of journal issues might become not needed once it is clear that the journal's scientific level is not discounted by institutions if it becomes online-only. It is possible that some institutions will still want a printed copy of the journal for archival purposes, so a possibility for a special print order should remain.
- 7) Promotion of the journal:
  - a) Updates/additional features of the journal can be communicated by email to the symbolic computation community.
  - b) Information about the journal and encouragement to consider submitting to the journal can be disseminated by the editor and editorial board members at conferences on other research topics that become potentially relevant to symbolic computation.

## Outlook for symbolic computation

Symbolic computation will likely increase its presence among the used methods due to:

- 1) The increasing computational power available to perform symbolic computation (which includes being able to tackle problems that were considered hopeless for symbolic computation)
- 2) The improvement of symbolic computation algorithms using new ideas (e.g., machine learning in ordering variables).

# Motivation

The main reasons that motivate me to become the editor of JSC include:

- 1) maintain the journal's high scientific level,
- 2) improve the visibility of the journal,
- 3) make the journal more attractive to researchers by reducing the average time for decision making and making the submission progress monitoring more transparent to the authors.

I am enthusiastic about the journal because symbolic computation is my main research area, and this is the leading journal in the area.

Main changes and new ideas include:

- 1) Incorporate an existing or create and maintain a new publisher-independent submission-handling website to make the work of the editorial board members less time-consuming and more transparent. Such a system would allow:
  - a) the editorial board members to easily track the submissions they handle
  - b) the authors to have a precise idea of the present status of the paper (which is expected to eliminate the need for the authors to contact the handling editorial member in many cases),
  - c) the editor to easily collect and analyze data on the submission handling process that can be used to advertise the journal.

A number of journals use such systems, and their successful experience would be an asset here.

- 2) Collect the data on timelines for handling submissions.
- 3) Based on the collected data, advertise the journal among the potential authors as a journal that makes thorough decisions regarding submissions in a timely manner.
- 4) Require the authors of revised submissions to additionally supply a version of the paper in which all of the changes are highlighted. This is to make checking the

revised submission more accurate and less time-consuming, which could also result in reducing the time to handle submissions. Some other journals have such a practice.

- 5) Communicate to potential authors, referees, and editorial board members such crucial advantages of a good publishing company as:
  - a) timely and relatively high quality/accuracy of copyediting,
  - b) transparency of the changes made by the copyeditor (e.g., TeX-style source code of the copyedited version transmitted to the author),
  - c) ease of proposing corrections by the authors to the copyedited version,
  - d) timely online posting of the corrected proofs.

The present publishing company so far seems to be ahead of many of its competitors in this regard.

- 6) This is so that, if it comes to consider views towards particular publishing companies, not only the institutional subscription price but also 5a)-5d) would be important factors.

Why is this important?

Authors of potential JSC submissions might send their work to other journals, for instance, because these other journals:

- 1) offer a more transparent submission tracking process,
- 2) post time estimates for handling typical submissions and these estimates indicate timely submission handling,
- 3) use a publishing company that charges lower institution subscription rates.

However, in making such a choice, some authors might not take into account 5a)-5d).