

# Joachim Jelisiejew

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## EMPLOYMENT

Oct 2019 – **University of Warsaw**  
*Samuel Eilenberg's assistant professor*

Oct 2017 – Sep 2019 **Polish Academy of Sciences**  
*assistant professor*

## EDUCATION

Oct 2013 – Sep 2017 **University of Warsaw**  
*PhD student in Mathematics*  
  
PhD Thesis *Hilbert schemes of points and their applications* (summa cum laude)  
Advisor: Jarosław Buczyński. Auxiliary advisor: Weronika Buczyńska.

Oct 2008 – Sep 2013 **University of Warsaw**  
*Master's degree in Mathematics*  
  
Master's Thesis *Deformations of zero-dimensional schemes and applications*  
(summa cum laude). Advisor: Jarosław Buczyński.  
Bachelor's Thesis *On commutativity of ideal extensions*. Advisor: Edmund Puczyłowski.

## SCIENTIFIC INTERESTS

### 1. Algebraic geometry:

- algebraic group actions and Bialynicki-Birula decompositions.
- moduli spaces, in particular Hilbert schemes of points on higher dimensional smooth varieties
- secant varieties and their applications.

2. **Commutative algebra:** Gorenstein rings and duality, Macaulay's inverse systems, Waring, cactus and smoothable ranks, syzygies of finite algebras.

3. **Applied commutative algebra:** computational complexity of matrix multiplication.

## SELECTED PUBLICATIONS

1. *Bialynicki-Birula decomposition for reductive groups* with Łukasz Sienkiewicz.  
To appear in Journal de Mathématiques Pures et Appliquées.
2. *Constructions of  $k$ -regular maps using finite local schemes* with Jarosław Buczyński, Tadeusz Januszkiewicz and Mateusz Michałek.  
Journal of the European Mathematical Society (JEMS) 21 (2019), no. 6, 1775–1808.
3. *Elementary components of Hilbert schemes*  
J. London Math. Soc., 100: 249-272, 2019.
4. *Irreducibility of the Gorenstein loci of Hilbert schemes via ray families*, with Gianfranco Casnati and Roberto Notari.  
Algebra Number Theory, 9(7):1525–1570, 2015.

For a complete list of publications, see  
my homepage <http://www.mimuw.edu.pl/~jjelisiejew/publications.html>,  
arXiv <https://arxiv.org/search/math?searchtype=author&query=Jelisiejew>  
mathscinet <https://mathscinet.ams.org/mathscinet/search/author.html?mrauthid=1061482>

## CONFERENCES AND SCIENTIFIC COOPERATION

- 22–28 Sep 2019 *Toric varieties workshop in MFO institute* (invitation only, **invited talk**), Oberwolfach, Germany
- 8–22 Sep 2019 *Scientific cooperation with Mateusz Michałek*, Leipzig, Germany
- 2–7 Sep 2019 *100 years of Polish Math Society congress* (**invited talk** at special session, Cracow, Poland)
  - Jul 2019 *Scientific cooperation with Maria Yakerson*, Warsaw, Poland
  - Jun 2019 *Derived Categories*, Warsaw, Poland
  - Jan 2019 *Scientific visit to Mateusz Michałek*, Leipzig, Germany (seminar talk)
  - Nov 2018 *Workshop on T-varieties*, Warsaw, Poland, (**invited talk**)
  - Sep 2018 *Meeting of Polish-Italian Math Societies*, Wrocław, Poland and Algebraic Geometry
  - June 2018 *Scientific visit to Alex Constantinescu*, Berlin
  - June 2018 *Scientific visit to Roberto Notari*, Milano
- 18–22 Sep 2017 *8 Forum of Polish Mathematicians*, Lublin (**invited talk** at the arithmetic geometry session).
- 5 May – 8 Jul 2017 *Deformations in Turin*, Torino (**contributed talk**).
- 27 May – 3 Jun 2017 Scientific visit to Maria E. Rossi and Shreedevis Masuti, Genova.
- 12 Aug – 11 Sep 2016 *Combinatorial Algebraic Geometry* semester at Fields Institute, Toronto, Canada.
- 28 Nov – 2 Dec 2016 *Algebra Geometry Meeting*, Barcelona (**invited talk**).
- 20 Aug – 3 Sep 2016 *Bernd Sturmfels’ apprenticeships at Combinatorial Algebraic Geometry*, Toronto, Canada.
- 15 Aug – 19 Aug 2016 *Introductory workshop at Combinatorial Algebraic Geometry*, Toronto, Canada.
- 1 – 4 Jul 2015 *Theory and applications of syzygies* on the occasion of Frank-Olaf Schreyer’s 60th birthday, Saarbrücken, Germany.
- 28 – 30 Jun 2015 Scientific meeting with J. Elias on Artin Gorenstein algebras, Barcelona.
- 25 – 26 Jun 2015 Scientific meeting with Maria E. Rossi on Artin Gorenstein algebras, Genova.
- 19 – 24 Jun 2015 Scientific cooperation with G. Casnati and R. Notari on smoothability of zero-dimensional schemes, Torino.
- 14 – 19 Jun 2015 *AGaFe* conference in honour of Philippe Ellia, Ferrara.
- 9 – 14 Jun 2015 *AMS-EMS-SPM meeting* in Porto, Portugal (**invited talk** on a special session).
- 16 – 20 Jun 2014 *Nordfjordeid Summer school 2014: Toric degenerations and mirror symmetry*, Nordfjordeid, Norway.
- 7 – 11 Apr 2014 Scientific visit to Bonn.
- 26 Feb – 4 Mar 2014 Scientific cooperation with G. Casnati and R. Notari on smoothability of zero-dimensional schemes, Warsaw.
- 23 – 26 Nov 2013 Scientific visit to A.A. Iarrobino, Northeastern University, Boston, MA, USA.
- 18 – 22 Nov 2013 *Graduate Workshop on Geometry of Hilbert schemes*, Stony Brook, NY, USA (**contributed talk**).
- 1 – 7 Sep 2013 36th Autumn School *Power sum decompositions and apolarity, a geometric approach*, Łukęcin, Poland (organiser).

- 14 – 20 Jul 2013 *Classical Aspects of Ring Theory and Module Theory*, Będlewo, Poland.
- 27 – 31 May 2013 *Szyzgies in Berlin* summer school of Freie Universität Berlin, Berlin.
- 15 – 22 May 2013 Scientific cooperation with G. Casnati and R. Notari on smoothability of zero-dimensional schemes, Politecnico di Torino, Torino, Italy.
- 16 – 24 Jan 2013 Scientific cooperation with G. Casnati and R. Notari on smoothability of zero-dimensional schemes, Politecnico di Torino, Torino, Italy.
- 23 – 29 Sep 2012 35th Autumn School *Subgroups of Cremona groups*, Łukęcin, Poland.
- 8 – 14 Jul 2012 SMI Summer Course *Tensors: Waring problems and Geometric Complexity Theory*, Cortona, Italy.
- 17 – 24 Sep 2011 34th Autumn School *Geometric Invariant Theory, old and new.*, Łukęcin, Poland.

## PRIZES AND HONOURS

- 2019 **Kuratowski's prize**, *IMPAN and Polish Math Society*  
[www.impan.pl/pl/wydarzenia/nagrody/nagroda-kazimierza-kuratowskiego](http://www.impan.pl/pl/wydarzenia/nagrody/nagroda-kazimierza-kuratowskiego).
- 2018 **Prime Minister of Poland Prize for PhD**,

## POPULARIZATION

- May 2009 – **Białystok University of Technology**  
*Coorganizer of local mathematical competition*  
 The competition is designed as an intermediate step between school and Mathematical Olympiad, four relatively easy proof tasks are given/4h.  
<http://konkurs.wi.pb.edu.pl>
- Dec 2016 – Sep 2019 **High School Mathematical Olympiad**  
*Member of the Problem Committee*  
<http://www.om.mimuw.edu.pl>
- Sep 2019 – **Junior Mathematical Olympiad**  
*Member of the Problem Committee*  
<http://www.omj.edu.pl>
- 2014  
*Editor of two mathematical circles handbooks*  
 The handbooks were made for „Stworzyszenie Edukacji Matematycznej”. Each contains around 15 full articles suitable for math-circle use.
- Oct 2006 – Jun 2014 **I LO, Białystok**  
*Teacher of High school mathematical circle*  
 The circle was viewed toward Polish Math Olympiad and met each week for two hours. Homepage: <http://www.mimuw.edu.pl/~jjelisiejew/matma/>.
- 2008 – 2013 **I LO, Białystok**  
*Main organiser of math summer camps*  
 Weekly summer camps for people interested in math and/or math olympiads.