Piotr Achinger

Personal Data

Date of Birth:	28 July 1986
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Academic Interests

- algebraic geometry

  positive characteristic algebraic geometry, Frobenius splitting methods, derived categories of coherent sheaves, homogeneous spaces, toric varieties and toric degenerations, abelian varieties, action of the Frobenius morphism on vector bundles

- homological and commutative algebra

  singularities in positive characteristic, triangulated categories of singularities, maximal Cohen-Macaulay modules, matrix factorizations

Education

2010–	Doctoral student, Hausdorff Center for Mathematics, Bonn, Germany
2005–	M. Sc. Programme in Computer Science at University of Warsaw, Faculty of Mathematics, Informatics and Mechanics Expected graduation date: June 2011
2005–2010	M. Sc. Programme in Mathematics at University of Warsaw, Faculty of Mathematics, Informatics and Mechanics Graduated with honors GPA: 4.92/5.0, GPA of Math Courses: 5.0/5.0 (27 undergraduate, 12 graduate math courses)
2002–2005	XIV Secondary School in Warsaw, experimental mathematical profile

Research Experience

2010–	Doctoral student, Hausdorff Center for Mathematics, Bonn, Germany. Focus: positive-characteristic algebraic geometry, Frobenius splittings, homogeneous spaces, toric degenerations.
2009–2010	*Frobenius push-forwards on quadrics*, M.Sc. Thesis supervised by Prof. Adrian Langer. Abstract: I generalize Langer's results concerning Frobenius direct images of line bundles on quadrics, describing explicitly the decomposition of higher push-forwards into a direct sum of line bundles and twisted spinor bundles. This result is applied to produce tilting bundles and study D-affinity of smooth quadrics.

Publications

2010	*A note on the Frobenius morphism on toric varieties*, arXiv:1012.2021, preprint
2010	*Frobenius push-forwards on quadrics*, arXiv:1005.0594, to appear in *Communications in Algebra*

Professional Experience

2009–2010	Software designer and developer; Institute of Computer Science, Polish Academy of Sciences

Other Projects

2009–2010	English translation of J.-P. Serre's *Faisceaux algébriques cohérents*
2007–2008	Member of Polish Mathematical Olympiad's problem selection comitee,
2009–	Member of Polish Mathematical Olympiad's Warsaw regional comitee,
2008–	Co-organizer of three subsequent editions of Scientific Summer Workshops, aimed at exceptional high-school students interested in mathematics, computer science and physics
2008–2009	Lead programmer of Dendrarium, computational linguistics software for analysing parse trees

Workshops and Conferences

Jan 2011	School on Moduli Spaces, Cambridge, United Kingdom
Nov 2010	School on Instantons and Rationality of Moduli Spaces, Berlin, Germany
Sep 2010	Second School in Deformation Theory, Rome, Italy
Jul 2010	IMPANGA Summer School on Algebraic Geometry, Będlewo, Poland
Feb 2010	Conference on Algebraic Geometry and Arithmetic, Essen, Germany
Feb 2010	Sixth Meeting for Young Mathematicians, Segovia, Spain
Sep 2009	EAGER Summer School on Torus Actions, Łukęcin, Poland
Jul 2009	Conference in Algebraic Topology, Warsaw University, Warsaw, Poland

Prizes and Scholarships

2010	2nd prize, Polish Mathematical Society Józef Marcinkiewicz Memorial Prize for the Best Student Paper in Mathematics
2010	International Fulbright Science and Technology Award
2009–2010	Ministry of Science and Higher Education scholarships for exceptional academic achievements
2006–	University scholarships for academic performance,
2009	First Prize, 16th International Mathematics Competition, Budapest, Hungary
2009	9th place, 19th Vojtech Jarnik Annual International Mathematical Competition, Ostrava, Czech Republic
2008	First Prize, 15th International Mathematics Competition, Blagoevgrad, Bulgaria
2007	First Prize, 14th International Mathematics Competition, Blagoevgrad, Bulgaria
2007	11th place, 17th Vojtech Jarnik Annual International Mathematical Competition, Ostrava, Czech Republic
2006	Second Prize, 13th International Mathematics Competition, Odessa, Ukraine
2005	Scholarship of the Ministry of Education
2005	Bronze Medal, 46th International Mathematical Olympiad, Merida, Mexico
2005	3rd place, 56th Polish Mathematical Olympiad
2004	Finalist, 55th Polish Mathematical Olympiad

Other Skills

– fluent English (TOEFL iBT: 111/120),
– reading knowledge of French and Russian (mathematical texts),
– programming & algorithm design (more than 25 000 lines of code in C, Java, C++, Python and other),
– considerable experience with Macaulay 2, Singular and Sage

Other Interests

– Russian cinematography,
– bridge,
– board games