

# Curriculum Vitae

January 2015

## Personal Data

- **Family Name:** Blocki
- **First Name:** Zbigniew
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www: <http://gamma.im.uj.edu.pl/~blocki>
- **Date of Birth:** 27 June 1967
- **Place of Birth:** Gdańsk, Poland
- **Family Status:** Married, 4 children

## Degrees

- Master Degree (with distinction) in mathematics at Jagiellonian University, thesis titled *Singular sets of separately analytic functions*, written under supervision of Józef Siciak, 1991 (English translation appeared in *Annales Polonici Mathematici*)
- Ph.D. (with distinction) Jagiellonian University, Institute of Mathematics, thesis titled *The complex Monge-Ampère operator in hyperconvex domains*, written under supervision of Józef Siciak, 1995 (English translation appeared in *Annali della Scuola Normale Superiore di Pisa*)
- Habilitation (with distinction), Jagiellonian University, Institute of Mathematics, thesis titled *Regularity of the complex Monge-Ampère equation*, 2001 (thesis consisted of the articles no. 12, 13, 15 and 16 from the list of publications)
- Title of professor (awarded by the President of Poland), 2009

## Employment

- Jagiellonian University, Institute of Mathematics
  - assistant 1990 - 1996
  - assistant professor (*adiunkt*) 1996 – 2007 (tenured position *adiunkt hab.* from 2002)
  - associate professor (*profesor nadzwyczajny*) 2007 – 2011
  - full professor (*profesor zwyczajny*) 2011 – present
- Mid Sweden University, Sundsvall, Szwecja, visiting professor, 6 visits 2 months each, 1994 – 1998
- Mathematical Institute of the Polish Academy of Sciences, special research position in the academic years 1997/98 and 2000/01
- Indiana University, Bloomington, visiting professor, Fall Semesters 2006 and 2013

## Other Positions

- Member of the jury of the Kuratowski Award, 2007 – 2010, chairman in 2009

- Deputy director of the Institute of Mathematics of Jagiellonian University, 2008 – 2011; director, 2011 – 2012
- Member of the jury of the *International Stefan Banach Prize for a Doctoral Dissertation in the Mathematical Sciences* 2009 – 2011, chairman in 2009
- Member of the Scientific Committee and the main organizer of the *Lojasiewicz Lecture* at Jagiellonian University, 2009 – present
- Member of the Board of Polish Mathematical Society, 2010 – 2013
- Member of the Council of National Science Centre (Polish grant agency), 2010 – present
- Member of the Scientific Council of Banach Center, 2010 – present
- Member of the Scientific Council of Mathematical Institute of the Polish Academy of Sciences, 2011 – present
- Member of the Committee for Mathematics of the Polish Academy of Sciences, 2012 – present
- Member of the Ethics Committee of the European Mathematical Society, 2014 – present

### Foreign Visits

- DAAD Scholarship, Bergische Universität, Wuppertal, Germany, 10 months, 1993
- Fulbright Fellowship (senior grant), 3 months at Indiana University in Bloomington, 6 months at the University of Michigan in Ann Arbor, 1999
- Max Planck Institute for Mathematics, Bonn, Germany, 9 months, 2001
- Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany, 3 months, 2002
- Nagoya University, Japan, visiting professor, 1 month, 2006
- Institut Mittag-Leffler, Djursholm, Sweden, 1 month, 2008
- Indian Institute of Science, Bangalore, 3 weeks, 2009
- CIRM, Luminy, France, 3 weeks, 2011
- Invited courses
  - *The complex Monge-Ampère equation on compact Kähler manifolds* during *Winter School in Complex Analysis*, Université Paul Sabatier, Toulouse, January 2005
  - *Some applications of the Ohsawa-Takegoshi extension theorem*, University of Hong Kong, May 2007
  - *The complex Monge-Ampère equation on compact Kähler manifolds*, Fudan University (Shanghai), May 2007
  - *Complex Monge-Ampère equation in Kähler geometry*, Indian Institute of Science, Bangalore, February 2009
  - *Complex Monge-Ampère equation in Kähler geometry*, C.I.M.E., Cetraro, Italy, July 2011
  - *Pluripotential Theory*, University of Vienna, September 2012
  - *Monge-Ampère and  $\bar{\partial}$* , Peking University, May 2014
  - *Several complex variables*, Adam Mickiewicz University, Fall 2014
- **Invited talks:** Umeå University (Sweden, 1994, 2002), Uppsala University (1994, 1995, 1996, 1997, 2002), Stockholm University (1995), University of Illinois at Chicago (1999), University of Western Ontario (London, Canada, 1999), University of Auckland (New Zealand, 1999), University of Wisconsin (Madison, 1999), Universität Bonn (Germany, 2001), Carl von Ossietzky Universität (Oldenburg, 2001), Nagoya University (2004, 2006, 2012), Schrödinger Institute (Vienna, 2005, 2009), Université Paul Sabatier (Toulouse, 2005), UAM (Poznań, 2006), Syracuse University (2006, colloquium), University of Michigan (Ann Arbor, 2006, 2013), Princeton University (2006), Institut Fourier (Grenoble,

2007), University of Rome II - Tor Vergata (2007), University of Hong Kong (2007), Fudan University (Shanghai, 2007), Tongji University (Shanghai, 2007, 2014), National University of Uzbekistan (Tashkent, 2008), Institute of Mathematics of Chinese Academy of Sciences (Beijing, 2008, colloquium), University of California, Irvine (2008), Harvard University (2009), University of Iceland (Reykjavik, 2010), University of Ljubljana (2010), University of Tel Aviv (2011), Uniwersytet Gdański (2012), Universität Wien (2012), Norwegian University of Science and Technology (Trondheim, 2012), University of Toledo (2013, colloquium), Purdue University (2013, colloquium), Columbia University (2008, 2010, 2013), Northwestern University (2013), University of Maryland (2013), Institut de mathématiques de Jussieu (Paris, 2014), Australian National University (Canberra, 2014), University of Adelaide (2014), Istanbul Analysis Seminar (2014), Peking University (2014)

### Selected Conference Invitations

- *Real Methods in Complex Analysis*, Oberwolfach, Germany, February 23 – March 1, 2003
- *7th Nordic Complex Analysis Meeting (NORDAN)*, Visby, Sweden, May 23 – 25, 2003
- *Monge-Ampère Type Equations and Applications*, Banff, Canada, August 2 – 7, 2003
- *International Conference on Complex Analysis in Several Variables* (satellite conference of 4ECM in Stockholm), Sundsvall, Sweden, June 21 – 24, 2004
- *First International Conference on Several Complex Variables and Complex Geometry*, Beijing, August 23 – 27, 2004
- *International Workshop on Potential Theory*, Matsue, Japan, August 23 – 28, 2004
- *Pluripotential Theory and its Applications*, Banff, Canada, September 4 – 9, 2004
- *Real Analytic and Complex Analytic Methods in Functional Analysis*, Istanbul, September 20 – 24, 2004
- *Kiselmanfest: An International Symposium in Complex Analysis and Digital Geometry*, Uppsala, May 15 – 18, 2006
- *Complex Analysis and Geometry*, Levico Terme, Italy, May 28 – June 1, 2007
- *Functional Analysis and Complex Analysis*, Istanbul, September 17 – 21, 2007
- *2nd Forum of Polish Mathematicians*, Częstochowa, Poland, July 1 – 4, 2008
- *Perspectives in Geometric Analysis*, Beijing, October 27 – 31, 2008
- *Conference on Geometry in honor of Shing-Tung Yau*, Warsaw, April 6 – 8, 2009 (as a speaker and as a member of the Scientific Committee)
- *Complex Analysis and Complex Geometry*, Banff, Canada, May 31 – June 5, 2009
- *14th Nordic Complex Analysis Meeting (NORDAN)*, Göteborg, May 7 – 9, 2010
- *Tambara Workshop on the Bergman Kernel and Related Topics*, Tambara Institute of Mathematics, The University of Tokyo, Numata, Gumma, October 24 – 28, 2011
- *Scientific Session in honour of Friedrich Hirzebruch on the occasion of his 85th birthday*, Warszawa, May 18, 2012
- *Hayama Symposium on Several Complex Variables*, Hayama, Japan, July 21 – 24, 2012
- *Complex Geometry and Partial Differential Equations* in honor of D.H. Phong on the occasion of his 60th birthday, Columbia University, New York City, May 7 – 11, 2013
- *Abel Symposium*, Trondheim, Norway, July 2 – 5, 2013
- *Geometric Invariance and Nonlinear Partial Differential Equations*, Kioloa, Australia, February 9 – 14, 2014
- *TSIMF Symposium on Complex Analysis and Complex Dynamics*, Tsinghua Sanya International Mathematics Forum, Sanya, China, May 12 – 16, 2014
- *9th Pacific Rim Conference on Complex Geometry*, Gunsan, Korea, July 27 – August 1, 2014 (satellite conference of ICM 2014 in Seoul)

- *10th Korean Conference in Several Complex Variables*, Gyeong-Ju, Korea, August 7 – 11, 2014 (satellite conference of ICM 2014 in Seoul)
- *DMV-PTM Mathematical Meeting*, Poznań, September 17 – 20, 2014 (plenary talk)
- *Geometric Methods of Complex Analysis*, Oberwolfach, Germany, January 25 – 31, 2015
- *19th Nordic Complex Analysis Meeting (NORDAN)*, Reykjavik, April 25 – 26, 2015

### Organization of Conferences

- *Workshop on Pluripotential Theory*, Banach Center, Warszawa, February 1997 (together with S. Kołodziej and J. Siciak)
- *Conference on Complex Analysis in honor of Józef Siciak's 70th birthday*, Bielsko-Biała, Poland, September 3 – 7, 2001 (together with M. Downarowicz, M. Jarnicki, S. Kołodziej, W. Pleśniak and T. Winiarski)
- *International Summer School in Several Complex Variables*, Szczyrk, Poland, June 19 – 23, 2006 (together with R. Czyż, M. Jarnicki, S. Kołodziej and W. Zwonek)
- *Session Complex Analysis and Operator Theory*, a part of the meeting between Polish Mathematical Society and American Mathematical Society, Warszawa, July 31 – August 3, 2007 (together with Z. Cuckovic and M. Ptak)
- *Complex Monge-Ampère Equation*, Banff, Canada, October 18 – 23, 2009 (together with P. Guan and D. Phong)
- *Conference on Several Complex Variables on the occasion of Professor Józef Siciak's 80th birthday*, Kraków, July 4 – 8, 2011 (together with A. Edigarian, S. Kołodziej, P. Zaprawski and W. Zwonek)
- *Session Complex Analysis and PDEs*, a part of the joint Israeli-Polish Mathematical Meeting, Łódź, September 11 – 15, 2011 (together with S. Zelditch)
- *6th European Congress of Mathematics*, Kraków, July 2 – 7, 2012 (vice-chair of the Executive Organizing Committee)
- *Complex Monge-Ampère Equation*, American Institute of Mathematics, Palo Alto, August 15 – 19, 2016 (together with Mihai Păun and Valentino Tosatti)

**Journals Refereed:** *Acta Mathematica* (Djursholm), *Advances in Mathematics*, *American Journal of Mathematics*, *Analysis & PDE*, *Annales de l'Institut Fourier*, *Annales Polonici Mathematici*, *Annals of Mathematics*, *Arkiv för Matematik*, *Bulletin of the Polish Academy of Sciences*, *Canadian Journal of Mathematics*, *Colloquium Mathematicum*, *Communications in Analysis and Geometry*, *Comptes Rendus Mathématique*, *Geometric and Functional Analysis (GAFA)*, *Indiana University Mathematics Journal*, *International Journal of Mathematics*, *International Mathematics Research Notices*, *Inventiones Mathematicae*, *Journal für die reine und angewandte Mathematik (Crelle's Journal)*, *Journal of Differential Geometry*, *Journal of the American Mathematical Society*, *London Mathematical Society*, *Mathematica Scandinavica*, *Mathematical Research Letters*, *Mathematische Annalen*, *Mathematische Nachrichten*, *Mathematische Zeitschrift*, *Michigan Mathematical Journal*, *Nagoya Mathematical Journal*, *Pacific Journal of Mathematics*, *Potential Analysis*, *Proceedings of the American Mathematical Society*, *Science in China Mathematics*, *Studia Mathematica*, *Transactions of the American Mathematical Society*

### Honors and Awards

- *F. Leja Award*, Institute of Mathematics, Jagiellonian University, 1991
- *Foundation for Polish Science (FNP) scholarship*, 1996
- *Polish Ministry of Education (MENiS) Award*, 2005

- *S. Zaremba Award*, Polish Mathematical Society, 2007
- Prime Minister Award for exceptional scientific achievement, 2009
- *Laur Jagielloński*, 2014

## Grants

- Researcher in KBN grant no. 2 P03A 05809 titled *Dirichlet Problem for the Complex Monge-Ampère Operator*, 1995–1997
- Researcher in KBN grant no. 2 P03A 00313 titled *Complex Monge-Ampère Operator and its Applications*, 1997–2000
- Leader of KBN grant no. 2 P03A 02819 titled *Regularity of the Complex Monge-Ampère Operator and Completeness of the Bergman Metric*, 2000–2003, 97 500 PLN
- Researcher in KBN grant no. 2 P03A 03726 titled *The Complex Monge-Ampère Equation*, 2003–2006
- Leader of PhD grant of Polish Ministry of Science and Higher Education no. N 201 039 31/3342 titled *Regularity of Solutions to the Complex Monge-Ampère Equation*, 2006–2007, 27 000 PLN
- Leader of PhD grant of Polish Ministry of Science and Higher Education no. N201 271235 titled *Applications of the Ohsawa-Takegoshi Theorem*, 2008–2010, 30 000 PLN
- Researcher in the Transfer of Knowledge programme titled *Kraków Geometry in Mathematical Physics*, (EU 6th Framework Programme) , 2006–2010
- Researcher in the special grant of Polish Ministry of Science and Higher Education no. 189/6 PR EU/2007/7, 2007–2010
- Leader of the grant no. N201 268335 of Polish Ministry of Science and Higher Education titled *Regularity of the Complex Monge-Ampère Equation*, 2008–2010, 85 250 PLN
- Researcher in the grant no. N201 3679 33 of Polish Ministry of Science and Higher Education titled *Applications of Pluripotential Theory for Kähler and Bergman Metrics*, 2007–2010
- - Coordinator of the International PhD Programme of Foundation for Polish Science titled *Geometry and Topology in Physical Models*, 2010–2015, 4 578 100 PLN
- Leader of the *Ideas Plus* grant of Polish Ministry of Science and Higher Education titled *Pluripotential Theory and  $\bar{\partial}$* , 2014–2017, 1 325 300 PLN

## Scientific publications

1. *A constant in pluripotential theory*, Annales Polonici Mathematici 56 (1992), 213–217
2. *Singular sets of separately analytic functions*, Annales Polonici Mathematici 56 (1992), 219–225 (English translation of the Master thesis)
3. *An elementary proof of the McCoy theorem*, Universitatis Iagellonicae Acta Mathematica 30 (1993), 215–218
4. *Estimates for the complex Monge-Ampère operator*, Bulletin of the Polish Academy of Sciences 41 (1993), 151–157
5. *On the  $L^p$ -stability for the complex Monge-Ampère operator*, Michigan Mathematical Journal 42 (1995), 269–275
6. *Smooth exhaustion functions in convex domains*, Proceedings of the American Mathematical Society 125 (1997), 477–484
7. *The complex Monge-Ampère operator in hyperconvex domains*, Annali della Scuola Normale Superiore di Pisa 23 (1996), 721–747 (English translation of the PhD thesis)
8. (joint with S. Kołodziej and N. Levenberg) *Extremal functions and equilibrium measures for Borel sets*, Bulletin of the Polish Academy of Sciences 45 (1997), 291–296

9. (joint with J. Thorbiörnson) *On the fundamental solution for the real Monge-Ampère operator*, *Mathematica Scandinavica* 83 (1998), 309–319
10. *Regularity of the fundamental solution for the Monge-Ampère operator*, *Proceedings of the Conference Progress in partial differential equations*, Pont-à-Mousson 1997, Pitman Research Notes in Mathematics Series 383, vol. 1, pp. 40–45, Addison Wesley Longman, 1998
11. (joint with P. Pflug) *Hyperconvexity and Bergman completeness*, *Nagoya Mathematical Journal* 151 (1998), 221–225
12. *On the regularity of the complex Monge-Ampère operator*, *Proceedings of the Conference Complex Geometric Analysis in Pohang*, 1997, ed. K.-T. Kim, S.G. Krantz, *Contemporary Mathematics* 222, pp. 181–189, American Mathematical Society, 1999
13. *Equilibrium measure of a product subset of  $\mathbb{C}^n$* , *Proceedings of the American Mathematical Society* 128 (2000), 3595–3599
14. *The  $C^{1,1}$  regularity of the pluricomplex Green function*, *Michigan Mathematical Journal* 47 (2000), 211–215
15. *Interior regularity of the complex Monge-Ampère equation in convex domains*, *Duke Mathematical Journal* 105 (2000), 167–181
16. *Regularity of the pluricomplex Green function with several poles*, *Indiana University Mathematics Journal* 50 (2001), 335–351
17. *On the Darboux equation*, *Universitatis Iagiellonicae Acta Mathematica* 39 (2001), 87–90
18. *Regularity of the degenerate Monge-Ampère equation on compact Kähler manifolds*, *Mathematische Zeitschrift* 244 (2003), 153–161
19. *Interior  $C^{1,1}$  regularity of the degenerate Monge-Ampère equation*, *Bulletin of the Australian Mathematical Society* 68 (2003), 81–92
20. *Uniqueness and stability for the Monge-Ampère equation on compact Kähler manifolds*, *Indiana University Mathematics Journal* 52 (2003), 1697–1702
21. *On the definition of the Monge-Ampère operator in  $\mathbb{C}^2$* , *Mathematische Annalen* 328 (2004), 415–423
22. *A note on the Hörmander, Donnelly-Fefferman, and Berndtsson  $L^2$ -estimates for the  $\bar{\partial}$ -operator*, *Annales Polonici Mathematici* 84 (2004), 87–91
23. *The Bergman metric and the pluricomplex Green function*, *Transactions of the American Mathematical Society* 357 (2005), 2613–2625
24. *On uniform estimate in Calabi-Yau theorem*, *Proceedings of SCV2004*, Beijing, *Science in China Series A Mathematics* 48 suppl. (2005), 244–247
25. *Weak solutions to the complex Hessian equation*, *Annales de l’Institut Fourier* 55 (2005), 1735–1756
26. *The domain of definition of the complex Monge-Ampère operator*, *American Journal of Mathematics* 128 (2006), 519–530
27. *The Bergman kernel and pluripotential theory*, *Proceedings of the Conference Potential Theory in Matsue*, 2004, *Advanced Studies in Pure Mathematics*, 44, pp. 1–9, Mathematical Society of Japan, Tokyo, 2006
28. *Some estimates for the Bergman kernel and metric in terms of logarithmic capacity*, *Nagoya Mathematical Journal* 185 (2007), 143–150
29. (joint with S. Kołodziej) *On regularization of plurisubharmonic functions on manifolds*, *Proceedings of the American Mathematical Society* 135 (2007), 2089–2093
30. *A Bergman kernel in  $\mathbb{R}^n$ , holomorphic functions, and related non-associative algebras*, *International Journal of Mathematics* 18 (2007), 1113–1132
31. *Defining nonlinear elliptic operators for non-smooth functions*, *Complex Analysis and Digi-*

- tal Geometry, Proceedings from the Kiselmanfest, 2006, ed. M. Passare, Acta Universitatis Upsaliensis, vol. 86, pp. 111–124, Uppsala, 2009
32. *Remark on the definition of the complex Monge-Ampère operator*, Proceedings of the Conference *Functional Analysis and Complex Analysis*, Istanbul 2007, Contemporary Mathematics 481, pp. 17–21, American Mathematical Society, 2009
  33. *The complex Monge-Ampère equation in Kähler geometry*, Proceedings of the 2nd Forum of Polish Mathematicians, Częstochowa, 2008, Prace Naukowe Instytutu Matematyki i Informatyki Politechniki Częstochowskiej 2(7) (2008), 5–13
  34. *Some applications of the Ohsawa-Takegoshi extension theorem*, Expositiones Mathematicae 27 (2009), 125–135
  35. *A note on maximal plurisubharmonic functions*, Proceedings of the Conference *Actual Problems of Complex Analysis*, Khiva City, Uzbekistan, 2008, Uzbek Mathematical Journal 1 (2009), 28–32
  36. *A gradient estimate in the Calabi-Yau theorem*, Mathematische Annalen 344 (2009), 317–327
  37. *On geodesics in the space of Kähler metrics*, Proceedings of the Conference in Geometry dedicated to Shing-Tung Yau (Warsaw, April 2009), in *Advances in Geometric Analysis*, Advanced Lectures in Mathematics 21, pp. 3–20, International Press, 2012
  38. (joint with A. Edigarian and J. Siciak) *On the product property for the transfinite diameter*, Annales Polonici Mathematici 101 (2011), 209–214
  39. (joint with S. Dinew) *A local regularity of the complex Monge-Ampère equation*, Mathematische Annalen 351 (2011), 411–416
  40. *On the uniform estimate in the Calabi-Yau theorem, II*, Science China Mathematics, 54 (2011), 1375–1377
  41. *The Calabi-Yau theorem*, course given at the Winter School in Complex Analysis, Toulouse, January 2005, in *Complex Monge-Ampère equations and geodesics in the space of Kähler metrics*, ed. V. Guedj, Lecture Notes in Mathematics 2038, pp. 201–227, Springer, 2012
  42. *On the Ohsawa-Takegoshi extension theorem*, Universitatis Iagiellonicae Acta Mathematica 50 (2012), 53–61
  43. *The complex Monge-Ampère equation in Kähler geometry*, kurs w ramach CIME Summer School *Pluripotential Theory*, Cetraro, Italy, 2011, eds. F. Bracci, J. E. Fornæss, Lecture Notes in Mathematics 2075, pp. 95–142, Springer, 2013
  44. *Suita conjecture and the Ohsawa-Takegoshi extension theorem*, Inventiones Mathematicae 193 (2013), 149–158
  45. (joint with Sz. Plis) *Squares of positive  $(p,p)$ -forms*, Comptes Rendus Mathématique, Académie des Sciences, Paris, 351 (2013), 27–32
  46. *A lower bound for the Bergman kernel and the Bourgain-Milman inequality*, Geometric Aspects of Functional Analysis, Israel Seminar (GAFA) 2011–2013, eds. B. Klartag, E. Milman, Lecture Notes in Mathematics 2116, pp. 53–63, Springer, 2014
  47. *Estimates for  $\bar{\partial}$  and optimal constants*, Proceedings of the Abel Symposium 2013, Lecture Notes in Mathematics, Springer (to appear)
  48. *Bergman kernel and pluripotential theory*, Proceedings of the Conference in honor of Duong Phong, Contemporary Mathematics, American Mathematical Society (to appear)
  49. *Cauchy-Riemann meet Monge-Ampère*, Bulletin of Mathematical Sciences 4 (2014), 433–480
  50. (joint with W. Zwonek) *Suita conjecture for some convex ellipsoids in  $\mathbb{C}^2$* , Experimental Mathematics (to appear)
  51. *On Nazarov’s complex analytic approach to the Mahler conjecture and the Bourgain-Milman inequality*, Proceedings of the KSCV10 Symposium, Springer (to appear)

## Other publications

1. *Pułapki oceny parametrycznej stosowanej przez MNiSW*, Wiadomości Matematyczne 47, Nr 1 (2011), 73–76
2. (joint with K. Życzkowski) *Uwagi o stosowaniu metod bibliometrycznych przy ocenie pracy naukowców*, przygotowane dla Zarządu Głównego Polskiego Towarzystwa Matematycznego, 2011, Pauza Akademicka 160 (2012), 1–2
3. *Pierwszy rok działalności Narodowego Centrum Nauki*, Wiadomości Matematyczne 48, Nr 1 (2012), 85–90
4. (joint with K. Życzkowski) *Czy można porównywać jabłka i gruszki? O danych bibliometrycznych w różnych dziedzinach nauki*, Nauka 2/2013, 37–46

All of the above papers as well as other unpublished lecture notes are available at <http://gamma.im.uj.edu.pl/~blocki>