CURRICULUM VITA

for

Alexander V. Isaev

Date and Place of Birth: December 28, 1964, Perm, Russia

Nationality: Australian

Office Address: Department of Mathematics
Australian National University
Canberra, ACT 0200
Australia
Telephone: +61-2-6125-4575
Fax: +61-2-6125-5549
E-mail: alexander.isaev@anu.edu.au
Home page: http://www.maths.anu.edu.au/∼isaev

Graduate Education: Ph.D., Mathematics, Moscow State University, 1990
Thesis advisor: A. G. Vitushkin
Thesis title: Classification of spherical tube hypersurfaces with Levi form that has at most two negative eigenvalues

Undergraduate Education: M.S., Mathematics, Moscow State University, 1986
Thesis advisor: A. G. Vitushkin
Thesis title: An estimate of the dimension of the image under a holomorphic mapping of real-analytic hypersurfaces

Positions Held: Assistant Professor
Moscow State University, 1989–92

Postdoctoral Research Fellow
Australian National University, 1992–94
Research Fellow
Australian National University, 1994–96
Australian Research Council Fellow
Australian National University, 1996–2001
Promotion to Level C, 1997
Lecturer, tenured position
Australian National University, appointed in 2001
Promotion to Senior Lecturer, 2002
Promotion to Associate Professor, 2005

Visiting Positions Held: Alexander von Humboldt Research Fellowship:

1. Gesamthochschule Wuppertal, Germany
   December 1995 – May 1996 and
   December 1996 – May 1997
2. Ruhr-Universität Bochum, Germany
   January – February 2007
3. Ruhr-Universität Bochum, Germany
   to be held in January – February 2010

Göteborg University, Sweden:
August – November 1998
University of Illinois, Urbana-Champaign:
January – May 2001
Ruhr-Universität Bochum, Germany:

1. January 2006
2. January – February 2010

Max-Planck Institut für Mathematik, Bonn:

1. April – May 2007
2. August – October 2010

GRANTS

ARC Discovery Grant for 2008–2010

ARC Discovery Grant for 2004–2006 (joint with S. Easteal, G. Huttley and M. Wakefield)

ARC Linkage Grant for 2004–2007 (joint with G. Huttley and Cray Inc.)

Ministry of Higher Education of Sweden Grant for 1998 (joint with A. Stolin of Göteborg University, Sweden)

ARC Small Grants for 1997, 1999, 2000

Faculty of Science Research Grants for 2003, 2004, ANU

MSI Research Grants for 2003, 2004, ANU

BIBLIOGRAPHY

Refereed Journal Articles

1. An estimate of the dimension of the image under a holomorphic mapping of real-analytic hypersurfaces (translated from Russian), *Math. USSR-Izv.* 30(1988), 89–102.
2. (With M. A. Mishchenko) Affine classification of tube quadrics that have one minus in the Levi signature form (Russian), *Mat. Zametki* 44(1988), 145–146.
3. (With M. A. Mishchenko) Classification of spherical tube hypersurfaces that have one minus in the Levi signature form (translated from Russian), *Math. USSR-Izv.* 33(1989), 441–472.
4. Reduction of the problem of classification of tube quadrics to the solution of a system of differential equations of a special form (translated from Russian), *Math. Notes* 45(1989), 354–360.
5. Classification of spherical tube hypersurfaces that have two minuses in the Levi signature form (translated from Russian), *Math. Notes* 46(1989), 517–523.
6. Global properties of spherical tube hypersurfaces, *Indiana Univ. Math. J.* 42 (1993), 179–213.
7. Kähler-Einstein metric on Reinhardt domains, *J. Geom. Analysis* 5 (1995),

237–254.

8. The images of Levi-nondegenerate manifolds under holomorphic mappings, *Complex Variables* 27 (1995), 217–233.
9. Rigid spherical hypersurfaces, *Complex Variables* 31(1996), 141–163.
10. (With S. Fu and S. G. Krantz) Reinhardt domains with non-compact automorphism groups, *Math. Res. Letters* 3(1996), 109–122.
11. (With S. Fu and S. G. Krantz) Finite type conditions on Reinhardt domains, *Complex Variables* 31(1996), 357–363.
12. (With S. G. Krantz) On the boundary orbit accumulation set for a domain with non-compact automorphism group, *Michigan Math. J.* 43(1996), 611–617.
13. (With S. Fu and S. G. Krantz) Examples of domains with non-compact automorphism groups, *Math. Res. Letters* 3(1996), 609–617.
14. (With S. G. Krantz) Finitely smooth Reinhardt domains with non-compact automorphism group, *Illinois J. Math.* 41(1997), 412–420.
15. (With S. G. Krantz) Hyperbolic Reinhardt domains in $\mathbb{C}^2$ with non-compact automorphism group, *Pacific J. Math.* 184(1998), 149–160.
16. (With V. V. Ezhov and G. Schmalz) Invariants of elliptic and hyperbolic CR-structures of codimension 2, *Internat. J. Math.* 10(1999), 1–52.
17. (With S. G. Krantz) Domains with non-compact automorphism group: a survey, *Advances in Math.* 146(1999), 1–38.
18. (With V. V. Ezhov) Canonical isomorphism of two Lie algebras arising in CR-geometry, *Publ. RIMS, Kyoto* 35(1999), 249–261.
19. (With J. A. Gifford and S. G. Krantz) On the dimensions of the automorphism groups of hyperbolic Reinhardt domains, *Illinois J. Math.* 44(2000), 602–618.
20. (With S. G. Krantz) Invariant distances and metrics in complex analysis, *Notices Amer. Math. Soc.* 47(2000), 546–553.
21. (With S. G. Krantz) On the automorphism groups of hyperbolic manifolds, *J. Reine Angew. Math.* 534(2001), 187–194.
22. Characterization of $\mathbb{C}^n$ by its automorphism group, *Analytic and Geometric Issues of Complex Analysis, Collected Papers, Dedicated to the 70th Anniversary of A. G. Vitushkin, Proc. Steklov Inst. Math.* 235(2001), 103–106.
23. (With N. G. Kruzhilin) Effective actions of the unitary group on complex

manifolds, *Canadian J. Math.* 54(2002), 1254–1279.

24. (With N. G. Kruzhilin) Effective actions of SU_n on complex n-dimensional manifolds, *Illinois J. Math.* 48(2004), 37–57.

25. (With A. Butterfield, V. Vedagiri, E. Lang, C. Lawrence, M. Wakefield and G. Huttley) PyEvolve: a toolkit for statistical modelling of molecular evolution, *BMC Bioinformatics* 5(2004):1 (12 pages).

26. Characterization of the unit ball in $\mathbb{C}^n$ among complex manifolds of dimension n, *J. Geom. Analysis* 14(2004), 697–700; erratum, *J. Geom. Analysis* 18(2008), 919.

27. (With M. Eastwood and V. Ezhov) Towards a classification of homogeneous tube domains in $\mathbb{C}^4$, *J. Diff. Geom.* 68(2004), 553–569.

28. On hyperbolic n-dimensional manifolds with automorphism group of dimension n^2, *Complex Variables* 50 (2005), 345–355.

29. Hyperbolic manifolds of dimension n with automorphism group of dimension $n^2 - 1$, *J. Geom. Analysis* 15(2005), 239–259.

30. (With V. V. Ezhov) On the dimension of the stability group for a Levi nondegenerate hypersurface, *Illinois J. Math.* 49(2005), 1155–1169; erratum, *Illinois J. Math.* 51(2007), 1035–1036.

31. Analogues of Rossi's map and E. Cartan's classification of homogeneous strongly pseudoconvex 3-dimensional hypersurfaces, *J. Lie Theory* 16(2006), 407–426.

32. (With N. G. Kruzhilin) Proper holomorphic maps between Reinhardt domains in $\mathbb{C}^2$, *Michigan Math. J.* 54(2006), 33–63.

33. Hyperbolic manifolds with high-dimensional automorphism group, *Collected Papers in the Memory of A. G. Vitushkin, Proc. Steklov Inst. Math.* 253(2006), 225–245.

34. Hyperbolic n-dimensional manifolds with automorphism group of dimension n^2, *Geom. Funct. Anal. (GAFA)* 17(2007), 192–219.

35. Proper actions of high-dimensional groups on complex manifolds, *J. Geom. Analysis* 17(2007), 649–667.

36. Complex manifolds admitting proper actions of high-dimensional groups, *J. Lie Theory* 18(2008), 141–160.

37. On proper actions of Lie groups of dimension $n^2 + 1$ on n-dimensional complex manifolds, *J. Math. Anal. Appl.* 342(2008), 1160–1174.

38. A remark on a theorem by Kodama and Shimizu, *J. Geom. Anal.* 18(2008), 795–799.

39. Hyperbolic 2-dimensional manifolds with 3-dimensional automorphism group, *Geometry and Topology* 12(2008), 643–711.

40. On Chern-Moser normal forms of strongly pseudoconvex hypersurfaces with high-dimensional stability group, *Pacific J. Math.* 235(2008), 235–244.

41. (With N. G. Kruzhilin) Proper actions of Lie groups of dimension n^2+1 on n-dimensional complex manifolds, *Israel J. Math.* 172(2009), 193–252.

42. Zero CR-curvature equations for rigid and tube hypersurfaces, *Complex Variables* (special issue), 54(2009), 317–344.

43. (With A. Huckleberry) Infinite-dimensionality of the automorphism groups of homogeneous Stein manifolds, *Math. Ann.* 344(2009), 279–291.

44. (With A. Huckleberry) Classical symmetries of complex manifolds, to appear in *J. Geom. Analysis* 20(2010).

45. (With I. Kossovskiy) Continuation of CR-automorphisms of Levi degenerate hyperquadrics to the projective space, to appear in *Illinois J. Math.*

Books

1. *Introduction to Mathematical Methods in Bioinformatics*, Springer-Verlag, 2004, 294 pp.; corrected second printing, 2006.

2. *Lectures on the Automorphism Groups of Kobayashi-Hyperbolic Manifolds*, Lecture Notes in Mathematics, vol. 1902, Springer-Verlag, 2007, 139 pp.

Refereed Conference Proceedings

1. Degenerate holomorphic mappings of nondegenerate CR-manifolds, Proc. Conference on Analysis and Applications, Brisbane, 20–23 September 1993;

Proc. Centre for Mathematics and Its Applications, Australian National University (eds. G. J. Martin, H. B. Thompson), 33(1994), 99–105.

2. (With S. G. Krantz) Characterization of Reinhardt domains by their automorphism groups, Proc. 3rd Korean Several Complex Variables Symposium, Seoul, 16–19 December 1998; *J. Korean Math. Soc.* 37(2000), 297–308.
3. Rotationally invariant complex manifolds, Proc. 6th Korean Several Complex Variables Symposium, Gyeong-Ju 14–18 August 2002; *J. Korean Math. Soc.* 40(2003), 391–408.
4. (With M. Eastwood) Examples of unbounded homogeneous domains in complex space, Proc. International Conference on Several Complex Variables and Complex Geometry, Capital Normal University, Beijing, 22–28 August 2004; *Science in China Series A Math.* 48 Supp.(2005), 248–261.
5. (With B. Easton, P. Maxwell and G. Huttley) A probabilistic method to identify compensatory substitutions for pathogenic mutations, Proc. 5th Asia Pacific Bioinformatics Conference, Hong Kong, 14–17 January 2007; *Advances in Bioinformatics and Comput. Biol.* 5(2007), 195–204.

Submitted Work

1. (With W. Kaup) Regularization of local CR-automorphisms of real-analytic CR-manifolds.
2. On the number of affine equivalence classes of spherical tube hypersurfaces.

Other Publications

1. (With V. V. Ezhov) Spherical tube hypersurfaces in $\mathbb{C}^3$ (Russian), Proc. International Symposium on Function Approximation, Ufa, 1987; Bashkirean University Press, 1987.
2. Branched mappings of real hypersurfaces in $\mathbb{C}^n$ (Russian), Proc. Conference on Complex Analysis and Its Applications, Lvov, 1988; Lvov University

Press, 1988.

3. (With V. V. Ezhov) Stability of signals in foliated media I (Russian), Annual Report of the Math. Dept. Geological Seminar, Moscow State University Press, 1988.
4. (With V. V. Ezhov) Stability of signals in foliated media II (Russian), Annual Report of the Math. Dept. Geological Seminar, Moscow State University Press, 1989.
5. Affine classification of spherical tube hypersurfaces that have two minuses in the Levi signature form (Russian), ©VINITI Moscow (117 pages), 1989.
6. Classification of spherical tube hypersurfaces with Levi form having no more than two negative eigenvalues (Russian), Ph.D. Thesis, ©Moscow State University (103 pages), 1990.
7. Linear equivariant embeddings of Stein manifolds (Russian), Proc. Annual Conference in Honour of Lomonosov, Moscow, 1990; Moscow State University Press, 1990.
8. Complex Variables: Single v Several, Proc. Instructional Workshop on Analysis and Geometry, Canberra 23 January-10 February, 1995; *Proc. Centre for Mathematics and Its Applications, ANU* (eds. T. Cranny, J. Hutchinson), 34(1996), Part II: Geometric Analysis, 121–124.
9. Invariants of elliptic and hyperbolic CR-structures of codimension 2, Proc. Hayama Symposium on Several Complex Variables, Hayama, 11–14 December, 1998; Hayama, Japan, 1999, 45–50.

SELECTED INVITED LECTURES

University of Minnesota, 1994
Purdue University, 1994, 2001
Indiana University, 1994
Washington University, St. Louis, 1994, 2000
University of Illinois, Urbana-Champaign, 1994, 2000, 2001 (4 lectures)
Special Session on SCV-PDE at the 891st AMS Meeting

Kansas State University, 1994
Oklahoma State University, 1994
University of Adelaide, 1994 (2 lectures), 2003
University of Auckland, 1994, 1999
Victoria University, Wellington, 1994
Macquarie University, 1994
Joint Seminar in Complex Analysis
Max-Planck Institute, Bonn/
University of Bonn/
University of Wuppertal, 1996 (3 lectures)
Joint Seminar in Complex Analysis
Universitat Autonoma de Barcelona/
Universitat de Barcelona, 1996
Göteborg University, 1996, 1998
University of Lille-I, 1997
University of Provence, 1997
University of Tübingen, 1997, 1999, 2006
Joint Seminar in Complex Analysis
Uppsala University/
Stockholm University, 1998
Joint Seminar in Analysis
Stockholm University/KTH, 1998, 1999
Lie Group Conference
Australian National University, 1998 (invited speaker)
Hayama Symposium on Several Complex Variables
Hayama, Japan, 1998 (invited speaker)
The 3rd Korean Several Complex Variables Symposium
Seoul National University, Korea, 1998 (2 lectures, invited speaker)
University of Sydney, 1999 (2 lectures)
The 4th Korean Several Complex Variables Symposium
Seoul National University, Korea, 1999 (invited speaker)
Conference on Holomorphic Mappings
American Institute of Mathematics, Palo Alto, 2000 (invited speaker)
University of California, San Diego, 2001
The International Conference on Several Complex Variables
A Satellite Conference to ICM 2002

Gyeong-Ju, Korea, 2002 (invited speaker)
CMA National Research Symposium on Differential Geometry and PDE
Australian National University, Canberra, 2002 (invited speaker)
University of South Australia, 2004
International Conference on Several Complex Variables and Complex Geometry
Capital Normal University, Beijing, China, 2004 (invited speaker)
International Conference on Several Complex Variables
Steklov Mathematical Institute, Moscow, 2005 (invited speaker)
Monash University, 2005
Analytic and Geometric Theories of Holomorphic and CR Mappings
Banff Research Station, Canada, 2006 (invited speaker)
University of New England (Armidale), 2006
Complex Analysis Seminar, Ruhr-Universität Bochum, 2006, 2007
Conference on CR Geometry and PDE's
A Satellite Conference to ICM 2006
Levico Terme, Italy, 2006 (invited speaker)
International Congress of Mathematicians
Madrid, 2006 (accepted contributed 20-minute talk)
Universität Göttingen, 2007
Hong Kong Geometry Colloquium, 2007
Hong Kong University Geometry Seminar, 2007
Fudan University (Shanghai, China) (2 lectures), 2007
Complex Function Theory and Geometry
Banach Center, Warsaw, Poland, 2007 (invited speaker)
The 8th Korean Several Complex Variables Symposium
Gyeong-Ju, Korea, 2007 (invited speaker)
Several Complex Variables Workshop
University of Adelaide, 2007 (invited speaker)
Analysis Seminar, University of New South Wales, 2007
University of Western Ontario, 2008
Rutgers University, 2008 (2 lectures)
Conference on CR Geometry and PDE's III
Levico Terme, Italy, 2008 (invited speaker)
Special Year in Analysis and its Applications
Indian Institute of Science, Bangalore, 2009 (8 lectures)
Workshop on Complex Geometry

University of Adelaide, 2009 (invited speaker)
Korea-Australia Analysis Forum
Busan, Korea, 2009 (invited speaker)
Workshop on Complex Analysis and Complex Geometry
Banff Research Station, Canada, 2009 (invited speaker)

STUDENTS DIRECTED

J. Sawon, vacational scholar, 1993
L. Rogers, B.S. Hon., 1994
G. Thorpe, vacational scholar, 1994
T. Gifford, B.S. Hon., 1995
Revantha Ramanayake, distinguished scholar, 2002
Sarah Bolt, Ph.B., 2003–2007
Matthew Pollard, Ph.B., since 2004
Brett Easton, Ph.D., 2004–2007
Raymond Sammut, Ph.D., 2005–2009
Galina Prosselkova, B.S. Hon., 2004–2005
Susan Batley, Ph.B., Advanced Studies Instructorship, 2005
Michael Carmody, B.S. Hon., 2006 (jointly with A. Neeman)
Michael Carmody, M.S., since 2007 (jointly with A. Neeman)

COURSES TAUGHT

Complex Analysis, 2nd year, Moscow State University, 1989–1992
Functional Analysis, 3rd year, Moscow State University, 1989-1992
Measure Theory, 3rd year, Moscow State University, 1989–1992
B12, Advanced Calculus 2, 2nd year, ANU, 1993
C23H, General Topology, 3rd and 4th years, ANU, 1995
C47H, Several Complex Variables, 3rd and 4th years, ANU, 1993, 1995 2005
MAN420, Complex Analysis, 3rd year, Göteborg University, 1998
MATH2030, Calculus, 2nd year, ANU, 1999

MATH3228, Complex Analysis, 3rd and 4th years, ANU, 1994, 1996, 1999–2001, 2006–2009
MATH344, Real Analysis, University of Illinois, Urbana-Champaign, 2001
MATH242, Calculus, University of Illinois, Urbana-Champaign, 2001
MATH2307, Bioinformatics and Biological Modelling, ANU, 2002–2009
MATH3017, Advanced Bioinformatics, ANU, 2002–2003
MATH1013, Mathematics and Applications 1, 2008–2009

OTHER ACTIVITIES

Associate Editor of the *Journal of Geometric Analysis*

Associate Editor of the *Journal of Mathematical Analysis and Applications*

International Reader of ARC Discovery grant applications

Reviewer for
Mathematical Reviews
Zentralblatt für Mathematik

Coordinator of the Honours Program
Mathematical Sciences Institute, ANU

Member of the Graduate Studies Committee,
School of Mathematical Sciences, ANU, 1995–2000

Member of the Mathematical Sciences Research
Visitors Program Committee,
School of Mathematical Sciences, ANU, 1995–1999

Colloquium Organiser
School of Mathematical Sciences, ANU, 1994–1998

Member of the Organising Committee of Lie 96 Conference
School of Mathematical Sciences, ANU, 1996

Member of the Organising Committee of the Conference on Geometric Analysis and Applications, School of Mathematical Sciences, ANU, 2000

Member of the Organising Committee of the Workshop on Several Complex

Variables and CR-geometry, University of New England (Armidale), 2006

Member of the Organising Committee of the 8th Pacific Rim Geometry Conference, Murramarang Resort, 2006

Organiser of the National Research Symposium in Several Complex Variables and Geometry, ANU, 2008

Member of the Organising Committee of the Japanese-Australian Workshop on Real and Complex Singularities, to be held on 15-18 September 2009 at the University of Sydney