Ilya Kossovskiy

Curriculum Vitæ

Department of Mathematics
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http://www.math.muni.cz/~kossovskiyi/index.php
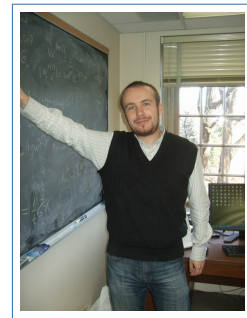
Personal Information

Born: *October 1982.*
Citizenship: *Czech.*

Degrees

2015 **Habilitation**, *University of Vienna*, Vienna, Austria.
2008 **Ph.D**, *Moscow State University*, Russia, advisor: Valeri Beloshapka.
2004 **M.S.**, *Moscow State University*, Russia, advisor: Valeri Beloshapka.

Research Interests

General: **Complex Analysis and Geometry; Dynamical Systems; Geometric Analysis**.

Primary: • **Cauchy-Riemann Geometry** *(CR-manifolds with Symmetries, CR-mappings, Holomorphic Continuation, Classification Problems, Normal Forms)*;

• **Holomorphic Dynamics** *(Normal forms for Differential Equations, Behavior of Solutions and Local Classification near Singularities, Painlevé Equations, Fuchsian Systems, Stokes Phenomena, Sectorial regularity, Summability Theory)*;

• **Equivalences and Symmetries of Geometric Structures** *(in Application to CR-geometry and Differential Equations)*.

Employment

Since 2016 **Associate Professor**, *Masaryk University*, Brno, Czech Republic.
Since 2016 **Principal Investigator**, *University of Vienna/TU Vienna*, Austria.
2015 - 2016 **Professor Visitante**, *Federal University of Santa Catharina*, Brazil.
2013 - 2015 **Principal Investigator**, *University of Vienna*, Austria.
2010 - 2013 **Assistant Professor**, *University of Western Ontario*, Canada.
2009 - 2010 **Postdoctoral Fellow**, *Australian National University*, Canberra, Australia.

Visiting Positions

Spring 2019 **University of California - San Diego**, San Diego, USA.
Mar 2014 **Trinity College Dublin**, Dublin, Ireland.

Publications

[1] "A complete normal form for everywhere Levi degenerate hypersurfaces in $\mathbb{C}^3$", **Advances in Mathematics**, 408 (2022), Paper No. 108590, 37 pp. (with M.Kolar).

[2] "The equivalence theory for infinite type hypersurfaces in $\mathbb{C}^2$", **Transactions of the AMS**, 375 (2022), no. 6, 4019—4056. (with P.Ebenfelt and B. Lamel).

[3] "Equivalence of three-dimensional Cauchy-Riemann manifolds and multisummability theory", **Advances in Mathematics**, 397 (2022), Paper No. 108117, 42 pp. (with B. Lamel and L.Stolovitch).

[4] "Convergent normal form for real hypersurfaces at a generic Levi degeneracy", **J. Reine Angew. Math. (Crelle's Journal)**, 49 (2019), 201–225 (with D. Zaitsev).

[5] "On Orbits of Action of 5-Dimensional Non-Solvable Lie Algebras in Three-Dimensional Complex Space", **Doklady Mathematics**, V. 100, 1 (2019), 377–379 (with A. Loboda).

[6] "Regularity of CR-mappings into Levi-degenerate hypersurfaces", *to appear in* **Comm. in Analysis and Geometry**, available at http://arxiv.org/abs/1609.00652 (with B. Lamel and M. Xiao).

[7] "Regularity of CR-mappings between Fuchsian type hypersurfaces in $\mathbb{C}^2$", *to appear in* **Complex Analysis and its Synergies**, available at https://arxiv.org/abs/2002.11527 (with B. Lamel and P. Ebenfelt).

[8] "Classification of homogeneous strictly pseudoconvex hypersurfaces in $\mathbb{C}^3$", **Math. Research Letters (MRL)**, to appear (with A.Loboda).

[9] "Real-analytic coordinates for smooth strictly pseudoconvex CR-structures", **Math. Research Letters (MRL)**, to appear (with D.Zaitsev).

[10] "On the analyticity of CR-diffeomorphisms", **American Journal of Mathematics (AJM)**, 140 (2018), no. 1, 139–188 (with B. Lamel).

[11] "On the embeddability of real hypersurfaces into hyperquadrics", **Advances in Mathematics**, 331 (2018), 239–267, (with M. Xiao).

[12] "Normal form for second order differential equations", **Journal of Dynamics and Control Systems**, 24 (2018), no. 4, 541–562. (with D. Zaitsev).

[13] "Analytic differential equations and spherical real hypersurfaces", **Journal of Differential Geometry (JDG)**, Vol. 102, No. 1 (2016), pp. 67 - 126 (with R. Shafikov).

[14] "Divergent CR-equivalences and Meromorphic Differential Equations", **Journal of the European Math. Society (JEMS)**, (2016) 13, 2785–2819 (with R. Shafikov).

[15] "Convergent normal form and canonical connection for hypersurfaces of finite type in $\mathbb{C}^2$", **Advances in Mathematics**, 2015, pp. 670-705 (with D. Zaitsev).

[16] "New extension phenomena for solutions of tangential Cauchy-Riemann PDEs", **Comm. Partial Differential Equations**, 41 (2016), no. 6, 925–951. (with B. Lamel).

[17] "Sphericity of a real hypersurface via projective geometry", in **International Journal of Mathematics (IJM)**, Vol. 27, No. 12 (2016) .

[18] "Sphere in $\mathbb{C}^2$ as a model for Levi-degenerate hypersurfaces in $\mathbb{C}^3$", **Russian Journal of Math. Physics**, 2015, V.22, N 4. (with V. Beloshapka).

[**19**] "Analytic continuation of holomorphic mappings from nonminimal hypersurfaces", ***Indiana Univ. Math. Journal***, 62 (2013), no. 6, 1891–1916. (with R. Shafikov).

[**20**] "Normal forms in CR-geometry: a survey", in ***Contemporary Mathematics***, Volume 681, 2017 (with M. Kolar and D. Zaitsev).

[**21**] "Classification of homogeneous CR-manifolds in dimension 4", ***Journal of Mathematical Analysis and Applications***, 2011, V. 374, no 2, pp. 655-672 (with V. Beloshapka).

[**22**] "Homogeneous hypersurfaces in $\mathbb{C}^3$, associated with a model CR-cubic", ***Journal of Geometric Analysis***, 2010, no 3, pp.538 - 564 (with V. Beloshapka).

[**23**] "Continuation of CR-Automorphisms of Levi Degenerate Hyperquadrics to the Projective Space", ***Illinois J. of Math.***, 2010, V.54, n.2, pp. 747-752, (with A. Isaev).

[**24**] "Envelopes of holomorphy of model manifolds", ***Ph.D Thesis***, *Moscow State University, 2008.*

[**25**]. "On envelopes of holomorphy of model manifolds", ***Izvestija Mathematics***, 2007, v.71, no 3, pp.545 - 571.

[**26**] "The envelope of holomorphy of a model third-degree surface and the rigidity phenomenon", ***Proceedings of the Steklov Institute of Mathematics***, 2006, no 2, vol.253, pp.22-36, (with R. Gammel).

Teaching

Spring 2019	**Linear Algebra, Undergrad. Course**, *University of California - San Diego*, USA.
Spring 2019	**Calculus, Undergrad. Course**, *University of California - San Diego*, USA.
since 2019	**Complex Analysis II, Graduate Course** , *Masaryk University in Brno*, Czechia.
since 2019	**Complex Analysis, Undergrad. Course**, *Masaryk University in Brno*, Czechia.
since 2017	**Advanced Calculus, Undergrad. Course**, *Masaryk University in Brno*, Czechia.
since 2017	**Problem Solving Seminar for Student Olympiadas**, *Masaryk University in Brno*, Czechia.
since 2016	**Dynamical Systems and Analytic Differential Equations, Graduate Course**, *Masaryk University in Brno*, Czechia.
Spring 2015	**Advanced Mathematics for School Teachers**, *Federal University of Santa Catarina*, Brazil.
Spring 2015	**Calculus, Undergrad. Course**, *Federal University of Santa Catarina*, Brazil.
2012 - 2013	**Linear Algebra, Undergrad. Course**, *University of Western Ontario*, Canada.
2010 - 2013	**Finite Math, Undergrad. Course**, *University of Western Ontario*, Canada.
2010 - 2011	**Calculus, Undergrad. Course**, *University of Western Ontario*, Canada.
2009 - 2010	**Several Complex Variables, Graduate Course**, *Australian National University*, Australia.

Grants and Awards

2021	**Brno - Sao Paulo cooperation grant**, *190 000 EUR*, Joint with Paulo Cordaro, Principal Investigator.
2020	**Stand alone grant**, *395 000 EUR*, Austrian Science Fund (FWF), Principal Investigator.

2020 **Czech Grant Agency standard grant**, *180 000 EUR*, Team member.

2017 **Austrian-Russian Cooperation Grant**, *366 000 EUR*, Austrian Science Fund (FWF), Principal co-Investigator.

2016 **Czech Grant Agency standard grant**, *180 000 EUR*, Principal Investigator.

2016 **Stand alone grant**, *343 000 EUR*, Austrian Science Fund (FWF), Principal Investigator.

2012 **Lise Meinter Grant**, *133 000 EUR*, Austrian Science Fund (FWF), Principal Investigator.

2004 **Russian Science Foundation Grant**, *500 000 RUB*, Russian Science Foundation, with the SCV group of Moscow State University and Steklov Institute, Moscow.

2007 **A. Vitushkin's Scholarship for Young Researchers**, Moscow State University.

2006 **A. Vitushkin's Scholarship for Young Researchers**, Moscow State University.

Conference organizing

Nov 2022 **Fifth Central European SCV Meeting**, Drnholec, Czechia.

Nov 2019 **Fourth Central European SCV Meeting (in Honor of V. Beloshapka and F. Meylan)**, Masaryk University, Brno, Czechia.

Apr 2019 **Third Central European SCV Meeting**, Jagiellonian University, Krakow, Poland.

Apr 2018 **Second Central European SCV Meeting**, University of Vienna, Vienna, Austria.

Oct 2017 **First Central European SCV Meeting**, University of Vienna, Vienna, Austria.

Nov 2015 **Workshop "Several complex variables and CR geometry"**, Schrodinger institute, Vienna, Austria.

Selected Refereeing Activities

Acta Mathematicae, *referee.*

Inventiones Mathematicae, *referee.*

Journal of Differential Geometry, *referee.*

Crelle's Journal, *referee.*

Advances in Math., *referee.*

Math. Annalen, *referee.*

Journal de Mathématiques pures et appliquées, *referee.*

International Math Research Notices, *referee.*

Journal of Geometric Analysis, *referee.*

Izvestiya Mathematics, *referee.*

Since 2012 **Mathematical Reviews (Mathscinet)**, *reviewer.*

INVITED LECTURES

Invited Conference Talks

Aug 2023 **44. The 10th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra**, Brazil.

June 2022	**43. Conference "Complex Analysis, Geometry, and Dynamics"**, Portoroz, Slovenia.
June 2022	**42. Conference "CR Geometry and PDEs"**, Trento, Italy.
Dec 2021	**41. Conference "SCV, CR Geometry and Dynamics"**, Nice, France.
Oct 2021	**40. Conference "Quantitative aspects in Complex Analysis, Geometry and Dynamics"**, Lille, France.
June 2021	**39. Conference "Multidimensional residues and tropical geometry"**, Sochi, Russia.
Jan 2021	**38. Conference "Analytic Theory of Differential and Difference Equations" in memory of A.Bolibruch**, Moscow, Russia.
Sep 2019	**37. Meeting of Austrian Math. Society**, Dornbirn, Austria.
Aug 2019	**36. The 9th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra**, Brazil.
June 2019	**35. Conference "Complex Geometry and PDEs"**, Trento, Italy.
Jan 2019	**34. AMS meeting**, Honolulu, USA.
June 2018	**33. Conference "CR-geometry and PDEs - VIII"**, Trento, Italy.
Jan 2018	**32. The 38th Winter School Geometry and Physics**, Srni, Czech Republic.
Sep 2017	**31. Joint meeting of Austrian and German Math. Societies**, Salzburg, Austria.
Aug 2017	**30. The 8th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra**, Brazil.
June 2017	**29. Workshop "Dynamics and CR-geometry"**, Nice, France.
June 2017	**28. Conference "Complex Geometry and PDEs"**, Trento, Italy.
Jan 2017	**27. The 37th Winter School Geometry and Physics**, Srni, Czech Republic.
Sep 2016	**26. Conference in Complex Analysis in Honor of S. Gonchar and A. Vitushkin**, Steklov Institute, Moscow, Russia.
Sep 2016	**25. Joint meeting of Austrian, Czech, et al. Math. Societies**, Barcelona, Spain.
May 2016	**24. Complex Analysis and Complex Geometry Conference**, Banff, Canada.
Jan 2016	**23. Conference on Analysis of PDEs**, Sao Carlos, Brazil.
Jan 2016	**22. PDE and Complex Analysis Conference**, Florida, USA.
Oct 2015	**21. Harmonic Analysis, $\overline{\partial}$, and CR Geometry Workshop**, Oaxaca, Mexico.
Oct 2015	**20. School and Workshop on Complex Analysis, Geometry and Dynamics**, Trieste, Italy.
Aug 2015	**19. The 8th Workshop on Geometric Analysis of PDEs and Several Complex Variables, Serra Negra**, Brazil.
May 2015	**18. Conference on Complex Geometry and Several Complex Variables**, Shanghai, China.
Mar 2015	**17. Conference on Complex Analysis and Geometry in honor of S. Webster**, Madison, Wisconsin, USA.
May 2014	**16. Workshop on Complex Analysis and Geometry**, Wuhan, China.
June 2013	**15. Conference CSASC 2013**, Koper, Slovenia.

Feb 2013	**14. KSCV Workshop 20**, Gyeong-Ju, Korea.
June 2012	**13. Conference "CR-geometry and PDEs - V"**, Trento, Italy.
Mar 2012	**12. AMS Central Sectional Meeting**, Lawrence, Kansas, USA.
June 2010	**11. Conference "CR-geometry and PDEs - IV"**, Trento, Italy.
Feb 2010	**10. Complex Analysis Winter School and Workshop**, Toulouse, France.
Nov 2009	**9. Workshop on New Currents in Geometry**, Adelaide, Australia.
Oct 2009	**8. The 53rd Annual Meeting of the Australian Mathematical Society**, Adelaide, Australia.
Sept 2009	**7. Australian-Japanese Workshop on Real and Complex Singularities**, Sydney, Australia.
May 2009	**6. Korea-Australia Analysis Forum 2009**, Busan, Korea.
Feb 2009	**5. Workshop on Complex Geometry**, Adelaide, Australia.
June 2008	**4. Conference "CR-geometry and PDEs - III"**, Trento, Italy.
May 2008	**3. Conference on Actual Problems of Complex Analysis**, Urgench, Uzbekistan.
May 2007	**2. Conference in Honor of A. Leontyev**, Ufa, Russia.
Sept 2006	**1. SCV Conference in Honor of A. Vitushkin**, Moscow, Russia.

Invited Colloquium Talks

March 2022	**14. Colloquium at the University of Zagreb**, Zagreb, Croatia.
Jan 2016	**13. Colloquium talk at Instituto de Matematica Pura e Applicada (IMPA)**, Rio de Janeiro, Brazil.
Jan 2016	**12. Colloquium talk at University of California, San Diego**, San Diego, USA.
Nov 2015	**11. Colloquium talk at Masaryk University - Brno**, Brno, Czech Republic.
Oct 2015	**10. Colloquium at Trinity College, Dublin**, Dublin, Ireland.
Mar 2015	**9. Colloquium talk, University of Wisconsin - Madison**, Madison, Wisconsin, USA.
Feb 2015	**8. Colloquium talk at Independent University - Moscow**, Moscow, Russia.
Nov 2014	**7. Trimester on Subriemannian Geometry at Institute Henri Poincare, Paris, Colloquium lecture**, Paris, France.
May 2014	**6. Colloquium at the University of Santa Catarina**, Florianopolis, Brazil.
Jan 2014	**5. Colloquium at Texas A&M University, Doha**, Doha, Qatar.
Nov 2013	**4. Colloquium at the University of Fribourg**, Fribourg, Switzerland.
Nov 2013	**3. Colloquium at Trinity College, Dublin**, Dublin, Ireland.
Nov 2013	**2. Colloquium at the University of Bern**, Bern, Switzerland.
Mar 2008	**1. Complex Analysis of Several Variables Programm, Institute Muttag-Leffler**, Djursholm, Sweden.

Postdoc and Graduate Students Advising

since 2022	**Phd co-advisor**, *for M.S. Vinícius Novelli da Silva*, Joinly with Paulo Cordaro, Masaryk University in Brno.
since 2022	**M.S. supervisor**, *for Bc. Artem Afanasiev*, Masaryk University in Brno.
since 2021	**Postdoc supervisor**, *for Dr. David Sykes*, Masaryk University in Brno.

since 2017 **Postdoc supervisor**, *for Dr. Jan Gregorovich*, University of Vienna/TU Vienna.

2017-2018 **Postdoc supervisor**, *for Dr. Martin Klimes*, University of Vienna.

2017-2019 **Postdoc supervisor**, *for Dr. Stefan Furdos*, Masaryk University - Brno.

2017 **Postdoc supervisor**, *for Dr. Shin Young Kim*, Masaryk University - Brno.

2011-2012 **Master Thesis co-advisor**, *for M.S. Vitaly Bykov*, "Envelopes of holomorphy of real submanifolds", in cooperation with Prof. Valeri Beloshapka.

Service and Experience

Spring 2017 **Curriculum Committee**, *Committee member*, Masaryk University in Brno, Czechia.

2014 - 2015 **Complex Analysis Seminar**, *Coorganizer*, University of Vienna, Austria.

2012 - 2013 **Analysis Seminar**, *Organizer*, University of Western Ontario, Canada.