

Aleksandar Milivojević

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RESEARCH INTERESTS Algebraic topology of manifolds and rational homotopy theory, in particular of complex, symplectic, and spin manifolds and their generalizations

ACADEMIC APPOINTMENTS **University of Waterloo**, Faculty of Mathematics William T. Tutte Postdoctoral Fellow August 2023 –

Max Planck Institute for Mathematics, Bonn. Postdoctoral fellow August 2021 – July 2023

EDUCATION **Stony Brook University**, Stony Brook, New York

Ph.D. student, **Mathematics**, August 2015 – May 2021, advisor **Dennis Sullivan**

University of Zagreb, Croatia

M.S., Theoretical Mathematics, 2013–2015, *Summa Cum Laude*, advisor **Goran Muić**

B.S., Mathematics, 2010–2013

PUBLICATIONS

- Milivojević, A. and Stelzig, J., 2024. Bigraded notions of formality and Aeppli-Bott-Chern-Massey products, *Communications in Analysis and Geometry*. [journal](#), [arxiv](#)
- Milivojević, A., 2024. Universal covers of non-negatively curved manifolds and formality, *Annals of Global Analysis and Geometry*. [journal](#), [arxiv](#)
- Milivojević, A., 2024. On the behavior of Massey products under field extension, *Journal of Pure and Applied Algebra*. [journal](#), [arxiv](#)
- Granja, G. and Milivojević, A., 2022. Topology of almost complex structures on six-manifolds, *SIGMA (Symmetry, Integrability and Geometry: Methods and Applications)*. [journal](#), [arxiv](#)
- Milivojević, A., 2022. On the characterization of rational homotopy types and Chern classes of closed almost complex manifolds, *Complex Manifolds*. [journal](#)
- Hu, J. and Milivojević, A., 2022. Infinite symmetric products of rational algebras and spaces, *Comptes Rendus Mathématique*. [journal](#), [arxiv](#)
- Milivojević, A., 2022. The weak form of Hirzebruch's prize question via rational surgery. *Journal of Topology and Analysis*. [journal](#)
- Ferlengez, B., Granja, G., and Milivojević, A., 2021. On the topology of the space of almost complex structures on the six sphere. *New York Journal of Mathematics*, Volume 27 (2021), 1258-1273. [journal](#), [arxiv](#)

- Albanese, M. and Milivojević, A., 2021. Spin^h and further generalisations of spin. *Journal of Geometry and Physics*, 164, p.104174. [journal](#) (see [Corrigendum at this link as well](#)), [arxiv](#)
- Milivojević, A., 2021. On the realization of symplectic algebras and rational homotopy types by closed symplectic manifolds. *Proceedings of the American Mathematical Society*, 149(5), pp.2257-2263. [journal](#), [arxiv](#)
- Milivojević, A., 2020. Another proof of the persistence of Serre symmetry in the Frölicher spectral sequence. *Complex Manifolds*, 7(1), pp.141-144. [journal](#)
- Cattalani, S. and Milivojević, A., 2020. Verifying the Hilali conjecture up to formal dimension twenty. *Journal of Homotopy and Related Structures*, pp.1-9. [journal](#), [arxiv](#)
- Albanese, M. and Milivojević, A., 2019. Connected sums of almost complex manifolds, products of rational homology spheres, and the twisted spin^c Dirac operator. *Topology and its Applications*, 267, p.106890. [journal](#), [arxiv](#)
- Albanese, M. and Milivojević, A., 2019. On the minimal sum of Betti numbers of an almost complex manifold. *Differential Geometry and its Applications*, 62, pp.101-108. [journal](#), [arxiv](#)

PREPRINTS

- Benirschke, F. and Milivojević, A., 2024. Punctures and formality for non-simply connected manifolds. [pdf](#)
- Granja, G. and Milivojević, A., 2024. Intersections of complex structures. [arxiv](#)
- Albanese, A. and Milivojević, A., 2024. Obstructions to almost complex structures following Massey. [arxiv](#)
- Milivojević, A., Stelzig, J., Zoller, L., 2023. Formality is preserved under domination. [arxiv](#)
- Milivojević, A., Stelzig, J., Zoller, L., 2022. Poincaré dualization and Massey products. [arxiv](#)

REPORTS

- Oberwolfach, Research in pairs with J. Stelzig, 2021. [link](#)
- Oberwolfach, Almost Complex Geometry mini-workshop, 2020. [link](#)

INVITED TALKS Brown University, Geometry and Topology seminar, April 2025

Beijing Institute for Mathematical Sciences and Applications, Topology seminar, March 2025

Tsinghua University, Yau Mathematical Sciences Center, Topology seminar, March 2025

University of Chicago, Algebraic topology seminar, May 2024

City University of New York Graduate Center, DGT seminar, March 2024

Ohio State University, Topology seminar, March 2024

Michigan State University, Geometry seminar, February 2024

University of Chicago, No Boundaries seminar, November 2023

Oregon–Wichita Topology/Geometry Zoom Seminar, October 2023 (online)

McMaster University, Geometry and Topology seminar, September 2023

LMU München, Oberseminar Geometrie, May 2023

University of Waterloo, Geometry and Topology seminar, March 2023

Oregon–Wichita Topology/Geometry Zoom Seminar, January 2023 (online)

City University of New York Graduate Center, Topology, Geometry, and Physics Seminar, November 2022 (online)

Université de Strasbourg, Algebra and Topology seminar, November 2022

City University of New York Graduate Center, DGT seminar, October 2022

Instituto Superior Técnico Lisboa, Geometry seminar, June 2022

Columbia University, Algebraic Topology seminar, May 2022

City University of New York Graduate Center, Differential Geometry and Topology seminar, March 2022

Universitat de Barcelona, Topology seminar, February 2022

IISER Kolkata, five-part lecture series October–November 2021 (online)

Max Planck Institute for Mathematics Bonn, Oberseminar, November 2021

Oregon–Wichita Topology/Geometry Zoom Seminar, September 2021 (online)

Ludwig–Maximilians–Universität München Oberseminar Geometrie, December 2020 (online)

Oregon–Wichita Topology/Geometry Zoom Seminar, December 2020 (online)

Oberwolfach mini-workshop Almost Complex Geometry, October 2020 (online)

City University of New York Graduate Center Almost Complex Geometry seminar, September 2020

Bronx Community College, City University of New York, December 2019

Ludwig–Maximilians–Universität München Oberseminar Geometrie, October 2019

City University of New York Graduate Center Almost Complex Geometry seminar, September 2019

University of Zagreb, Croatia, Topology Seminar, March 2019

City University of New York Graduate Center Topology, Geometry, and Physics Seminar, November 2018

University of Zagreb, Croatia, Topology Seminar, July 2018

City University of New York Graduate Center Almost Complex Geometry seminar, March–April 2018

Workshop on J-holomorphic curves and Gromov–Witten invariants at the National Institute of Science Education and Research (NISER) Bhubaneswar, India, July 2017

Dennis Sullivan’s City University of New York Graduate Center seminar, May 2017

CONTRIBUTED Algebraic Structures in Topology, San Juan, June 2024

TALKS

Hodge theory and cohomological jump loci, Stockholm, May 2024

Institut Mittag–Leffler, workshop “Higher algebraic structures in algebra, topology and geometry”, February 2022

CONFERENCES, Complex geometry and Lie groups, Osaka, March 2025

WORKSHOPS

(with contributed talk) Algebraic structures in topology, San Juan, June 2024

(with contributed talk) Hodge theory and cohomological jump loci, Stockholm, May 2024

Higher Algebra, Geometry, and Topology, CIRM Luminy, May 2024

Peter Teichner’s 60th birthday conference, Les Diablerets, Switzerland, May 2023

Four Decades of the Einstein Chair Seminar, City University of New York Graduate Center, January 2023

Twinned Conference on Homotopy Theory with Applications to Arithmetic and Geometry, at the Max Planck Institute in Bonn, June 2022

(with contributed talk) Institut Mittag–Leffler, workshop “Higher algebraic structures in algebra, topology and geometry”, participated two weeks, January–February 2022

Oberwolfach Research-in-Pairs, with J. Stelzig, “Formality, non-zero degree maps, and (almost) complex manifolds”, December 2021

(with talk) Oberwolfach mini-workshop Almost Complex Geometry, October 2020

European Talbot workshop on free loop spaces, Fischbach bei Dahn, Germany, July–August 2018

James Simons’ 80th birthday conference – Fluids in $\dim \leq 3$ and complex manifolds in $\dim \geq 3$, CUNY Graduate Center, April 2018

(with two lectures) Workshop on J-holomorphic curves and Gromov–Witten invariants at the National Institute of Science Education and Research (NISER) Bhubaneswar, India, July 2017

Algebraic Geometry Northeastern Series, November 2016, University of Massachusetts Amherst, and April 2016, Yale University

Graduate Student Conference in Algebra, Geometry, and Topology, May 2016, Temple University

TEACHING EXPERIENCE	<p>Instructor, University of Waterloo</p> <ul style="list-style-type: none"> • <i>Pure Math 965 Topics in Geometry and Topology: Rational homotopy theory in geometry</i>, Fall 2024; 9 students, plus several auditors • <i>Math 115 Linear Algebra for Engineering</i>, Fall 2023; 109 students <p>Teaching Assistant, Stony Brook University</p> <ul style="list-style-type: none"> - <i>Calculus</i>, Fall 2015, Fall 2016, Spring 2017, Spring 2018, Fall 2018, Fall 2019, Spring 2020 - <i>Introduction to Analysis</i>, Fall 2017, Spring 2019 - <i>Differential Equations with Linear Algebra</i>, Spring 2016 - <i>Differential Equations: Dynamics and Change</i>, grader Spring 2016 - <i>Advanced Algebraic Topology</i>, grader Fall 2020 - <i>Geometry for Teachers</i>, grader Fall 2020 - <i>Topology/Geometry II graduate core course</i>, grader Spring 2021 <p>Junior Teaching Assistant (leading supplementary weekly recitations, problem sessions), University of Zagreb</p> <ul style="list-style-type: none"> - <i>Linear Algebra, Probability, Set Theory, Metric Spaces</i>
MENTORING STUDENTS	<p>Mentored two undergraduate students visiting the Max Planck Institute in Bonn on a research project in the rational homotopy theory of almost complex manifolds, <i>On almost complex rational quaternionic projective spaces</i>. September 2022.</p> <p>(Unofficial) Assisted Peter Teichner in mentoring Anton Ablov for Master’s thesis at the University of Bonn, 2022</p> <p>Mentored the sophomore Spencer Cattalani (who is now a math PhD student at Stony Brook) as part of the Directed Reading Program at Stony Brook University. This led to the publication “Verifying the Hilali conjecture up to formal dimension twenty”, <i>Journal of Homotopy and Related Structures</i>, 2020; link</p>
OUTREACH, SERVICE, AND OTHER EXPERIENCE	<p>American Mathematical Society Graduate Student Chapter at Stony Brook, <i>President</i>, 2017–2019. – involved securing funds and organizing student activities</p> <p>Various programs for extracurricular mathematics for high-school students while at the University of Zagreb (co-initiated a program at the Lucijan Vranjanin Gymnasium) and at Stony Brook (reference: David Kahn)</p> <p>Tutor at the Mathematics Learning Center, Stony Brook University 2015–2021</p> <p>Long Island Science and Engineering Fair, Mathematics Judge 2017</p> <p>Referee for <i>Advances in Mathematics</i>, <i>Journal of Topology</i>, <i>Mathematische Nachrichten</i>, <i>Complex Manifolds</i>, <i>EMS Surveys in Mathematical Sciences</i>, <i>Münster Journal of Mathematics</i>, <i>Vietnam Journal of Mathematics</i>, <i>Proceedings of the International Geometry Center</i>, <i>Europhysics Letters</i>; quick opinions for <i>Algebraic and Geometric Topology</i>, <i>Differential Geometry and its Applications</i>, <i>La Matematica</i></p> <p>Reviewer for zbMATH, Mathematical Reviews</p>