

Arturo Espinosa Baro

Current position: Postdoc at the Institute of Mathematics of the Polish Academy of Sciences (IM PAN).

Email: arturo.espinosabaro@gmail.com aespinosabaro@impan.pl

Website: arturoespinosabaro.github.io

ORCID: orcid.org/0000-0003-0184-6211

EMPLOYMENT

Institute of Mathematics of the Polish Academy of Sciences (IM PAN)

Assistant professor (postdoc)

Warsaw, POL

2025- 2027

EDUCATION

Adam Mickiewicz University

Ph.D. in Algebraic Topology. Advisor: Prof. dr. hab. Wacław Marzantowicz.

Poznań, POL

2024

- Thesis: “*Topics on Topological Robotics: On topological complexity of Eilenberg-MacLane spaces and effective topological complexity.*” Publicly defended 11/02/25.

RESEARCH PAPERS

Published

1. *On properties of effective topological complexity and effective Lusternik-Schnirelmann category.* joint with Zbigniew Błaszczyk and Antonio Viruel. To appear in **Proc. R. Soc. Edinb., Sect. A, Math.**
2. *Sequential topological complexity of aspherical spaces and sectional categories of subgroup inclusions.* joint with Michael Farber, Stephan Mescher and John Oprea. **Math. Ann.**, **391** Issue 3 (2025), 4555–4605.
3. *On the sectional category of subgroup inclusions and Adamson cohomology theory.* joint with Zbigniew Błaszczyk and José Gabriel Carrasquel-Vera. **J. Pure. Appl. Algebra** **226** (2022), no. 6, 106959.
4. *A cohomological characterization of nilpotent fusion systems.* joint with Antonio Díaz Ramos and Antonio Viruel. **Proc. Amer. Math. Soc.** **146** (2018), 1447-1450.

Preprints

1. *Sectional category of subgroup inclusions and sequential topological complexities of aspherical spaces as \mathcal{A} -genus.* arXiv:2502.06670.

In preparation

1. *Lefschetz number of equivariant mapping by equivariant cohomology theory.* joint with Wacław Marzantowicz.

CONFERENCE TALKS AND POSTER PRESENTATIONS

- *Applied Topology in Poznań*, Poznań, Poland. 14-18 Jul 2025
- *Joint meeting of the NZMS, AustMS and AMS*, Auckland, NZ. 09-13 Dec 2024
- *Young Topologist Meeting*, Münster, Germany. 05-09 Aug 2024

- *9th European Congress of Mathematics*, Sevilla, Spain. 15-19 July 2024
- *Conference “Joint perspectives in Geometry, Algebra and Topology”*, Barcelona, Spain. 01-05 July 2024
- *Conference “Nielsen theory and related topics”*, Oostende, Belgium. 05-09 June 2023
- *Workshop “Some problems of Applied and Computational Topology”*, Bedlewo, Poznan, Poland 05-11 March 2023
- *Young Topologist Meeting*, University of Copenhagen, Denmark. 18-22 July 2022
- *Workshop “Topological Complexity and Motion Planning”*, Banff IRS, Oaxaca, Mexico (online). 29 May-3 June 2022
- *XXVII Spanish Topologist Meeting*, University of Sevilla, Spain. 22-23 Oct. 2021
- *IX Spanish Young Topologist Meeting*, University of Sevilla, Spain. 19-21 Oct. 2021
- *GSTG Conference 2021*, Indiana University, USA (online). 9-11 April 2021
- *Advance Course on Geometry, Topology and Algebra*, Autonomous University of Barcelona, Spain. 27-31 May 2019
- *Workshop on Applied Topology 2019*, Kyoto University, Japan. 7-11 Jan. 2019
- *UMI-SIMAI-PTM*, University of Wrocław, Poland. 17-20 Sept. 2018
- *Young Topologist Meeting*, University of Copenhagen, Denmark. 9-13 Jul. 2018
- *XXIV Spanish Topologist Meeting*, University of Bilbao, Spain. 18-19 Oct. 2017
- *VI Spanish Young Topologist Meeting*, University of Bilbao, Spain. 18-19 Oct. 2017

SCHOLARSHIPS AND GRANTS

- PI of National Center of Science, Poland research grant 2022/45/N/ST1/02814 PRELUDIUM 2023 –2025
- Ph.D. scholarship from the doctoral school of exact sciences of Adam Mickiewicz University. 2019 –2024.
- Excellence Initiative - Research University from Ministry of Science and Higher Education call: Support for internationalization of scientific research at the Doctoral School of the Adam Mickiewicz University. 2022
- Supported as an undergraduate by project 2016/21/P/ST1/03460 Polonez 2 project “Algebraic topology and its applications”. 2018

PARTICIPATION IN SEMINARS

- **Topological Complexity Seminar AATRN-TCS** Ongoing
Participant. Invited speaker during the session of 28/03/24 “On properties of effective topological complexity and effective Lusternik-Schnirelmann category.”
- **Kraków Algebraic and Differential Topology Seminar** Poland 19 Dec 2024
Invited speaker.
- **Warsaw Algebraic Topology Seminar** Poland 16 Oct 2024
Invited speaker.
- **SAGA: Seminarium of Algebra, Geometry and Arithmetics of AMU** Poland 18 Oct 2023
Invited speaker.
- **Doctoral Forum of the Doctoral School of Exact Sciences, AMU Poznan** Poland 2019-2023
Yearly research exposition.
- **Algebraic Geometry Seminar at Adam Mickiewicz University** 2019–2020
Participant. Gave lectures on the description of the algebraic fundamental group and the inverse Galois problem for algebraic curves.

PARTICIPATION IN WORKSHOPS AND SCHOOLS

- **Summer school on Homological Aspects of Groups and their classifying spaces** Switzerland 4-9 May 2025
- **Groups and Geometry Workshop** Budapest, Hungary 7-11 April 2025
- **CIMAT Mérida Applied Topology School** CIMAT Mérida, Mexico 7-12 Nov. 2024
- **Oberwolfach Seminar: Metric Topology of Aspherical Spaces** Germany 20-25 Oct. 2024
- **Toposes as bridges...** University of Warwick (online) Feb-Mar 2022
- **Lecture series: “Model categories by examples”** London Math. Soc. and TTT Net. (online) Nov. 2020
- **School on Categorical Methods for Rings and Algebras**, Granada, Spain 8-14 Nov. 2015
- **Workshop on Homological Algebra** ICMAT, Spain 2-6 April 2015
- **School of initiation to research on non-commutative algebra** Córdoba, Spain 14-16 Nov. 2014

RESEARCH VISITS

- Research visit at Martin Luther University Halle-Wittenberg September 2023
Hosted by Dr. Stephan Mescher.
- Research visit at University of Malaga April 2022
Hosted by Prof. Antonio Viruel.
- Long stay as undergraduate at Adam Mickiewicz University 2018
Supported by 2016/21/P/ST1/03460 Polonez 2. Hosted by Dr. José Gabriel Carrasquel Vera.

TEACHING

- **Teaching Assistant** at Adam Mickiewicz University Summer term 2022
Ergodic Theory of Numbers
- **Teaching Assistant** at Adam Mickiewicz University Summer term 2021
Probability Theory

OTHER ACTIVITIES

- Referee work for the journals *Topological Methods in Nonlinear Analysis* and *Journal of Applied and Computational Topology*.
- Reviewer for zbMATH Open and MathSciNet Mathematical Reviews.
- Organization and execution of the divulgative workshop “Algebraic topology and its applications” at the XXXVIII Dwujęzyczne Liceum Ogólnokształcące, Poznan, Poland.
- Experience with tutoring and teaching of supplementary lessons of Mathematics for both University and High School students.
- Faculty representative student in the students general council of University of Cádiz.
- Collaborator Student with the Department of Mathematics of University of Cádiz.
- Participant in students organizations.

LANGUAGES

- **English** Fluent (C1 official accreditation)
- **Polish** Basic
- **Spanish** Native
- **Programming** Mathematica, Matlab, C++, LaTeX, Basic Python.

REFERENCES

- | | |
|---|--|
| • Wacław Marzantowicz (PhD advisor)
<i>waclaw.marzantowicz@amu.edu.pl</i> | Adam Mickiewicz University in Poznan, Poland |
| • Antonio Viruel Arbáizar
<i>viruel@uma.es</i> | University of Málaga, Spain |
| • John Oprea
<i>jfoprea@gmail.com</i> | Cleveland State University, USA |