

CONTACT INFORMATION	<p><i>Mailing address:</i> 4021 Winfield Ave Fort Worth, TX 76109 USA</p>	<p><i>Work address:</i> University of North Texas Department of Mathematics 1155 Union Circle #311430 Denton, TX 76203–5017</p>	<p><i>Email:</i> Ignat.Soroko@unt.edu ignat.soroko@gmail.com <i>WWW:</i> www.math.unt.edu/~soroko</p>
RESEARCH INTERESTS	<p>Group theory from the combinatorial, geometric and topological point of view, with emphasis on Artin groups, Coxeter groups, quasi-isometry invariants, Dehn functions of groups, and mapping class groups. I also have an ongoing interest in ‘Hanna Neumann’ type of questions, stable commutator length, and criteria for linearity.</p>		
ACADEMIC POSITIONS	<p><b>Visiting Assistant Professor</b> University of North Texas, August 2022 – present</p> <p><b>Dean’s Post-Doctoral Scholar</b> Florida State University, August 2021 – August 2022</p> <p><b>Postdoctoral Researcher</b> Louisiana State University, August 2018 – May 2021</p>		
VISITING POSITIONS	<p><b>Visiting Researcher</b> “Combinatorial Nonpositive Curvature”, BIRS, Banff, Canada, September 1–6, 2024.</p> <p><b>Visiting Researcher</b> “Hot Topics: Artin Groups and Arrangements – Topology, Geometry, and Combinatorics”, SLMATH, Berkeley, California, March 10–16, 2024.</p> <p><b>Visiting Researcher</b> “Geometry and topology of Artin groups”, American Institute of Mathematics (AIM), Caltech, Pasadena, California, September 10–16, 2023.</p> <p><b>Long Term Visitor</b> “Thematic Program on Toric Topology and Polyhedral Products”, the Fields Institute, Toronto, Ontario, Canada, January–July 2020. (accepted, canceled due to Covid-19)</p> <p><b>Visiting Researcher</b> Sydney Mathematical Research Institute, School of Mathematics and Statistics, The University of Sydney, May–June 2019.</p> <p><b>Associate Member</b> “Geometric Group Theory” Program, Mathematical Sciences Research Institute (MSRI), Berkeley, August–October 2016.</p>		
EDUCATION	<p><b>University of Oklahoma</b>, Norman, OK</p> <p>Ph.D., May 2018</p> <ul style="list-style-type: none"> <li>• Thesis: <i>Dehn functions of subgroups of right-angled Artin groups.</i></li> <li>• Adviser: Dr. Noel Brady</li> <li>• Area of Study: Geometric group theory</li> </ul> <p><b>Michigan State University</b>, East Lansing, MI</p> <p>Master of Science, May 2013</p> <ul style="list-style-type: none"> <li>• Area of Study: Mathematics</li> </ul>		

## GRANTS

- NSF Standard Topology Grant, 2025–2028 (pending).
- NSF Standard Topology Grant, \$97095, 2023–2026 (not funded).
- AMS–Simons Travel Grant, \$4000, AMS, Providence, RI, 2019–2023.
- Early-career AMS–NSF–Simons–ICM Travel Grant, \$1500, AMS, Providence, RI, 2022.
- Kovalevskaya Grant, \$2000, ICM Organizing Committee, St. Petersburg, Russia, 2022.
- GEAR Graduate Internship, \$7500, MSRI, Berkeley, CA, Fall 2016.

## PAPERS AND PREPRINTS

### In preparation:

16. Abstract commensurators of Artin groups of type  $D_n$ .
15. Endomorphisms of Artin groups of type  $\tilde{C}_n$ . (Joint with L. Paris)

### Published/Accepted/Submitted:

14. Humanity’s Last Exam (Joint with L. Phan et al.) arxiv:2501.14249.
13. Explicit polynomial bounds on Dehn functions of subgroups of hyperbolic groups. (Joint with R. Kropholler and C. Llosa Isenrich, submitted) arxiv:2501.01688.
12. Property  $R_\infty$  for new classes of Artin groups. (Joint with N. Vaskou) arxiv:2409.18123.
11. Endomorphisms of Artin groups of type  $B_n$ . (Joint with L. Paris, accepted in *Journal of Algebra*) arxiv:2409.12552.
10. Endomorphisms of Artin groups of type  $\tilde{A}_n$ . (Joint with L. Paris, submitted) arxiv:2406.02484.
9. Divergence, thickness and hypergraph index for general Coxeter groups. (Joint with P. Dani, Y. Naqvi and A. Thomas, accepted in *Israel Journal of Mathematics*) arxiv:2209.15254.
8. Property  $R_\infty$  for some spherical and affine Artin–Tits groups. (Joint with M. Calvez) *Journal of Group Theory* 25, 6 (2022), 1045–1054.
7. Homological Dehn functions of groups of type  $FP_2$ . (Joint with N. Brady and R. Kropholler, submitted) arxiv:2012.00730.
6. Artin groups  $F_4$  and  $H_4$  are not commensurable with that of type  $D_4$ . *Topology and its Applications* 300 (2021), 107770.
5. Linearity of some low-complexity mapping class groups. *Forum Mathematicum*, 32, 2 (2020), 279–286.
4. Realizable ranks of joins and intersections of subgroups in free groups. *International Journal of Algebra and Computation* 30, 3 (2020), 625–666.
3. Uncountably many quasi-isometry classes of groups of type FP. (Joint with R. Kropholler and I. Leary) *American Journal of Mathematics*, 142, 6 (2020), 1931–1944.
2. Genus bounds in right-angled Artin groups. (Joint with M. Forester and J. Tao). *Publicacions Matemàtiques* 64, 1 (2020), 233–253.
1. Dehn functions of subgroups of right-angled Artin groups. (Joint with N. Brady) *Geometriae Dedicata* 200 (2019), 197–239.

### Other texts:

- Linearity criteria for poly-free groups. Available at [www.math.unt.edu/~soroko](http://www.math.unt.edu/~soroko)

- On a question of Peter Sarnak. Available at [www.math.unt.edu/~soroko](http://www.math.unt.edu/~soroko)

**Other materials:**

- Humanity’s Last Exam (dataset contributor). <https://lastexam.ai/>, 2025.
- A GAP code for computing hypergraph index. <https://github.com/ignatsoroko/HypergraphIndex>, 2022
- Divergence in Coxeter groups. TCU, 2022, Audiovisual resource. <https://www.youtube.com/watch?v=5Yr6GCEftaw>
- Commensurability of spherical Artin groups. University of Sydney, 2021, Audiovisual resource. <https://www.youtube.com/watch?v=Cj0hOqydN-Y>
- Groups of type FP: their quasi-isometry classes and homological Dehn functions. TCU, 2021. Audiovisual resource. <https://www.youtube.com/watch?v=Xoj8A5QdBUo>
- Intersections and joins of subgroups in free groups. CIRM, 2020. Audiovisual resource. <http://dx.doi.org/10.24350/CIRM.V.19636903>

AWARDS AND  
HONORS

- UNT College of Science Postdoc award for attending “Artin Groups, Braids, and Mapping Class Groups: Celebrating the Work of Luis Paris” conference, Cáceres, Spain, June 16–20, 2025.
- Travel award for attending “Geometry and Analysis of Groups and Manifolds” workshop, Pisa, Italy, June 26–30, 2023.
- Travel award for attending “Geometry, Arithmetic, and Groups” conference, University of Texas at Austin, Austin, Texas, June 20–24, 2022.
- Travel award for attending the 53rd Spring Topology and Dynamical Systems Conference, University of Birmingham, Birmingham, Alabama, March 14–16, 2019.
- Graduate Research Assistantship (supervisor: Dr. Jing Tao), University of Oklahoma, Fall 2017 – Spring 2018.
- Richard V. Andree Memorial Scholarship Award, University of Oklahoma, April 2017.
- University of Oklahoma Dissertation Completion Fellowship, Fall 2016.
- Cornell Topology Festival Support Award, April 2015.
- **Provost Certificate of Distinction in Teaching, University of Oklahoma, Spring 2014.**
- Nancy Scofield Hester Mathematics Scholarship, University of Oklahoma, Department of Mathematics, April 18, 2014
- John Clark Brixey Graduate Scholarship, University of Oklahoma, April 15, 2014.
- Department of Mathematics International Graduate Student Scholarship, University of Oklahoma, 2013–2017.

- *Artin groups via mapping class groups:*
  - “Combinatorial Nonpositive Curvature” workshop, BIRS, Banff, Canada, September 5, 2024.
- *Divergence in Coxeter groups:*
  - Topology Seminar (online), UW–Milwaukee, Milwaukee, Wisconsin, February 1, 2023.
  - Geometry and Geometric Analysis (GAGA) Seminar, Texas Christian University, Fort Worth, Texas, November 4, 2022.
  - Bowling Green State University – University of Toledo joint Geometry and Topology seminar (online), September 8, 2022.
  - Long-distance seminar on Geometric Group Theory, UNAM, Mexico, March 17, 2022.
  - FSU/UF joint topology and geometry meeting, University of Florida, Gainesville, Florida, February 11–12, 2022
  - WIMSA Workshop: Braids, Links and Applications, Institute of the Mathematical Sciences of the Americas, Miami, Florida, November 15–18, 2021.
  - Millican Colloquium, University of North Texas, Denton, Texas, October 22, 2021.
- *Commensurability of spherical Artin groups*
  - World of GroupCraft (online), August 25–26, 2021
- *Intersections and joins of subgroups in free groups*
  - Virtual Geometric Group Theory Conference, CIRM, Luminy, June 1–5, 2020.
- *Uncountably many quasi-isometry classes of groups of type FP (and their homological Dehn functions):*
  - Topology and Geometry Seminar, Florida State University, Tallahassee, Florida, January 19, 2021.
  - Groups and Dynamics Seminar, Texas A&M University, College Station, Texas, November 25, 2020.
  - Geometry and Topology Seminar, Binghamton University, Binghamton, New York, November 5, 2020.
  - AMS Fall Western Sectional Meeting, University of California, Riverside, California, November 9–10, 2019.
  - Geometry, Topology and Dynamical Systems Seminar, University of Texas at Dallas, Richardson, Texas, September 30, 2019.
  - Geometry and Topology Seminar, University of Sydney, Sydney, Australia, June 18, 2019.
  - Geometric Group Theory Seminar, Ohio State University, Columbus, Ohio, March 26, 2019.
  - Geometric Group Theory and Topology Seminar, Tufts University, Medford, Massachusetts, October 24, 2017.
  - Geometry and Topology Seminar, University of Oklahoma, Norman, Oklahoma, February 22, 2017.
  - Geometry Seminar, University of Arkansas, Fayetteville, Arkansas, February 16, 2017.
- *Subgroups of right-angled Artin groups and their Dehn functions:*
  - TCU Mathematics Colloquium, Texas Christian University, Fort Worth, Texas, February 20, 2019.

- *Dehn functions of subgroups of right-angled Artin groups:*
  - Virtual Geometry and Topology Seminar, Louisiana State University, Baton Rouge, Louisiana, August 29, 2018.
  - MSRI Introductory Seminar, MSRI, Berkeley, California, August 31, 2016.
  - Purdue Geometry Seminar, Purdue University, West Lafayette, Indiana, February 1, 2016.
- *Right-angled Artin groups and their subgroups:*
  - Informal Geometry and Topology Seminar, Louisiana State University, Baton Rouge, Louisiana, August 29, 2018.
- *Virtually special free-by-cyclic groups:*
  - Geometry and Topology Seminar, University of Oklahoma, Norman, Oklahoma, November 12, 2014.
- *Higman’s group and its relatives:*
  - Graduate Student Geometry and Topology Seminar, University of Oklahoma, Norman, Oklahoma, October 20, 2014.
- *A new linearity criterion of Bou–Rabee and McReynolds:*
  - Geometry and Topology Seminar, University of Oklahoma, Norman, Oklahoma, April 30, 2014.

CONFERENCE  
TALKS

- *Property  $R_\infty$  for Artin groups*
  - The 37th Summer Conference on Topology and Applications, Youngstown University, Youngstown, OH, July 17–21, 2023.
  - The 40th annual workshop in Geometric Topology, Colorado College, Colorado Springs, CO, June 15–17, 2023.
  - Redbud Topology Conference, University of Oklahoma, Norman, OK, March 31–April 2, 2023.
  - The South Central Topology Conference II, Texas State University, San Marcos, TX, February 11–12, 2023.
- *Divergence in Coxeter groups*
  - The 39th annual (online) workshop in Geometric Topology, TCU, June 6–9, 2022.
  - AMS Spring Eastern Virtual Sectional Meeting, Special Session on Subgroups in Non-positive Curvature, March 19–20, 2022.
  - 55th annual Spring Topology and Dynamics Conference, Baylor University, Texas, March 9–13, 2022.
- *Groups of type  $FP_2$ : how many of them are there?*
  - Young Geometric Group Theory X, Newcastle University (online), July 26–30, 2021
- *Groups of type  $FP$ : their quasi-isometry classes and homological Dehn functions*
  - Beyond Hyperbolicity at the Ohio State University, June 28–July 2, 2021.
  - The 38th annual (online) workshop in Geometric Topology, TCU, June 15–17, 2021.
  - GAGTA 2021, University of Edinburgh, June 7–11, 2021 (online).

- *Intersections and joins in free groups:*
  - AMS Spring Eastern Sectional Meeting, Tufts University, Medford, Massachusetts, March 21–22, 2020 (Canceled due to Covid-19).
  - AMS Fall Southeastern Sectional Meeting, University of Arkansas, Fayetteville, Arkansas, November 3–4, 2018.
- *On the stable commutator length in (two-dimensional) right-angled Artin groups:*
  - 52nd Spring Topology and Dynamical Systems Conference, Auburn University, March 14–17, 2018.
  - Fall 2017 Redbud Topology Conference, University of Oklahoma, Norman, Oklahoma, November 18, 2017.
- *Uncountably many quasi-isometry classes of groups of type FP:*
  - 53rd Spring Topology and Dynamical Systems Conference, University of Birmingham, Birmingham, Alabama, March 14–16, 2019.
  - Topological and Homological Methods in Group Theory, Bielefeld, Germany, April 3–6, 2018.
  - JMM San Diego, January 10–13, 2018.
  - AMS Fall Central Sectional Meeting, University of North Texas, Denton, Texas, September 9–10, 2017.
  - 32nd Summer Conference on Topology and Its Applications, University of Dayton, Dayton, Ohio, June 27–30, 2017.
- *Dehn functions of subgroups of right-angled Artin groups:*
  - Topology Students Workshop, Georgia Institute of Technology, Atlanta, Georgia, June 6–10, 2016.
  - 50th Spring Topology and Dynamics Conference, Baylor University, Waco, Texas, March 10–13, 2016.
  - Geometric and Probabilistic Methods in Group Theory and Dynamical Systems, Texas A&M University, College Station, Texas, November 9–12, 2015.
  - 13th annual Graduate Students Geometry and Topology Conference, Urbana-Champaign, Illinois, March 28–29, 2015.
- *Lubotzky’s linearity criterion:*
  - Algebra Symposium, University of North Texas, Denton, Texas, November 9, 2013

SERVICE AND  
OUTREACH

- Referee for the journals:
  - Algebraic and Geometric Topology*
  - Groups, Geometry and Dynamics*
  - Journal of Algebra*
  - Proceedings of the AMS*
  - Topology and its Applications*
- Co-organizer of the Redbud topology conference, University of Oklahoma, Norman, April of 2014 and 2016.
- Co-organizer of the University of Oklahoma annual math contest “Math Day” for high school students: Fall of 2013, 2014, and 2015.

- Co-organizer of the English language training seminars for international students at the Department of Mathematics, University of Oklahoma, Fall 2013.
- Co-organizer of the 9th annual Graduate Student Topology Conference, Michigan State University, East Lansing, April 2–3, 2011.
- Organizer of the Graduate Students Algebraic Topology Seminar, Michigan State University, Spring 2011.

TEACHING  
EXPERIENCE

**University of North Texas**, Denton, TX

- Fall 2022, 2023, 2024: Linear Algebra and Vector Geometry (large class)
- Spring 2023, 2024: Calculus II (large class)
- Fall 2024: Business Calculus (large class)
- Spring 2025: Discrete Mathematics

**Florida State University**, Tallahassee, FL

- Fall 2021, Spring 2022: Calculus with Analytic Geometry II (2 small classes)

**Louisiana State University**, Baton Rouge, LA

- Spring 2021: Calculus II (2 small classes, online).
- Fall 2019: Calculus II (large class).
- Fall 2018: Calculus I (small class).

**University of Oklahoma**, Norman, OK

*Lecturer of small class and recitations session leader:*

- Courses taught: Calculus-I,II,III, Honors Calculus-II,III.

**Michigan State University**, East Lansing, MI

*Lecturer of small class and recitations session leader:*

- Courses Taught: College Algebra, College Algebra and Trigonometry, Survey of Calculus, Calculus-I, Calculus-II;
- Served as the Supervisor for the Math Learning Center.

PROFESSIONAL  
MEMBERSHIP

American Mathematical Society

OTHER

Proficient in GAP, Mathematica, Python, and Maple, as well as C++ and  $\LaTeX$ . Written software to support research by experimenting with different classes of groups, complexes and other combinatorial objects on computer. Languages: Russian (native), English (fluent), French (working command).

REFERENCES:

**Noel Brady**  
Professor of Mathematics  
University of Oklahoma  
nbrady@ou.edu

**Pallavi Dani**  
Associate Professor of Mathematics  
Louisiana State University  
pdani@math.lsu.edu

**Ian J. Leary**  
Professor of Pure Mathematics  
University of Southampton  
I.J.Leary@soton.ac.uk

**James Oxley** (Teaching Reference)  
Boyd Professor of Mathematics  
Louisiana State University  
oxley@math.lsu.edu

**Martin Bridson**  
Whitehead Professor of Pure Mathematics  
President, Clay Mathematics Institute  
University of Oxford  
bridson@maths.ox.ac.uk

**Max Forester**  
Professor of Mathematics  
University of Oklahoma  
forester@math.ou.edu

**Luis Paris**  
Professor of Mathematics  
Université de Bourgogne  
Luis.Paris@u-bourgogne.fr

**Ralf Schmidt** (Teaching Reference)  
Professor, Chair  
University of North Texas  
ralf.schmidt@unt.edu