

# Naneh Apkarian, PhD

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## CURRENT POSITION

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Assistant Professor of Mathematics Education  
School of Mathematical and Statistical Sciences  
Arizona State University  
Tempe, AZ, USA

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## EDUCATION

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PhD | Mathematics Education | 2013 - 2018

University of California San Diego & San Diego State University

Dissertation: Transforming Precalculus to Calculus 2: A Longitudinal Study of Social and Structural Change in a University Mathematics Department

Advisor: Dr. Chris Rasmussen, San Diego State University

MA | Mathematics | 2011 – 2013

University of California San Diego

Qualifying exams: Applied Algebra; Complex Analysis

BA | Mathematics | 2006 – 2010

Pomona College

Thesis: Cutsets on Boolean Lattices

Advisor: Dr. Shahriar Shahriari

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## RESEARCH EXPERIENCE

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### Major involvement

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#### **Evaluating the Uptake of Research-Based Instructional Strategies in Undergraduate Chemistry, Mathematics, & Physics**

NSF DUE #1726328, #1726281, #1726042, #1726126, #2028134 | [sites.google.com/view/rbisproject](https://sites.google.com/view/rbisproject)

- Senior Personnel (2020-21)
- Postdoctoral Research Associate (2018-20)

#### **Progress through Calculus (PtC)**

NSF DUE #1430540 | [www.maa.org/ptc](http://www.maa.org/ptc)

- Senior Personnel (2018-21)
- Research Assistant (2015-18)

#### **Student Engagement in Mathematics through an Institutional Network for Active Learning (SEMINAL)**

NSF DUE #1624610, #1624643, #1624628, #1624639, 2016-2021 | [www.aplu.org/seminal](http://www.aplu.org/seminal)

- Senior Personnel (2020-21)
- Research Assistant (2015-20)

### **Knowledge Shifts in the Mathematics Classroom: The Roles of Students and Teachers**

Israeli Science Foundation, Grants No. 438/15, 2015-2019

- Research Assistant

### **Exploring the Role of Instructors' Social Networks in Undergraduate STEM Instructional Improvement**

NSF DUE #1550990

- Research Assistant

### **Research Experience for Undergraduates and Teachers 2009: Biomathematics Project**

San Diego State University

- Undergraduate Research Assistant

### **Limited involvement**

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### **Teaching Inquiry-oriented Mathematics: Establishing Supports (TIMES)**

NSF DUE #1431595, #143141, #1431393 | [times.math.vt.edu](http://times.math.vt.edu)

- Research Assistant

### **Characteristics of Successful Programs in College Calculus (CSPCC)**

NSF DRL #0910240 | [www.maa.org/cspcc](http://www.maa.org/cspcc)

- Research Assistant
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## **TEACHING & MENTORING**

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### **Arizona State University teaching**

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#### **Mathematics**

- MAT 170: Precalculus (SP21)
- MAT 207: Algebra and Geometry in the High School (FA20)

#### **Mathematics Education**

- MTE 210: Mentored Tutoring Internship (FA20)
- MTE 591: Topic: Teaching Undergraduate Math Education Seminar (SP21)
- MTE 598: Topic: DEI in Postsecondary STEM Education Research (FA21)

### **Non-ASU teaching**

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#### **San Diego State University (2013-16)**

- MAT 210: Elementary Number Systems. Primary instructor
- Differential Equations. Co-taught with Dr. Chris Rasmussen
- Dynamical Systems. Co-taught with Dr. Tommy Dreyfus

#### **University of California San Diego (2012 – 2013)**

- MAT 187: Cryptography. Co-taught with Dr. Adriano Garsia
- MAT 155A: Geometric Computer Graphics. Co-taught with Dr. Adriano Garsia
- MAT 20F: Linear Algebra. Graduate Teaching Assistant
- MAT 20D: Differential Equations. Graduate Teaching Assistant

## Doctoral committee membership

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### Arizona State University

Abby Rocha (2021 - Ongoing)

- Advisor: Dr. Marilyn Carlson

Kayla Lock (2021 - Ongoing)

- Co-Advisor with Dr. Marilyn Carlson

Ishtesa Khan (2021 - Ongoing)

- Co-Advisor with Dr. Marilyn Carlson

### External

Tyler Sullivan (2021 - Ongoing)

- Clemson University, School of Engineering & Science Education
- Advisor: Dr. Matthew Voigt

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## PUBLICATIONS

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### Journal articles

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Williams, M., **Apkarian, N.**, Uhing, K., Smith, W. M., Martinez, A., & Rasmussen, C. (2021). In the driver's seat: Course coordinators as change agents for active learning in university Precalculus to Calculus 2. *International Journal of Research in Undergraduate Mathematics Education*. doi: 10.1007/s40753-021-00153-w

**Apkarian, N.**, Henderson, C., Stains, M., Raker, J. R., Johnson, E., & Dancy, M. H. (2021). What really impacts the use of active learning in undergraduate STEM education? Results from a national survey of chemistry, mathematics, and physics instructors. *PLOS ONE* 16(2): e0247544. <https://doi.org/10.1371/journal.pone.0247544>

**Apkarian, N.**, & Rasmussen, C. (2021). Instructional leadership structures across five university departments. *Higher Education*, 81(4), 865-887. <https://doi.org/10.1007/s10734-020-00583-6>. Available at <https://rdcu.be/b5qY3> [Published online July 2020]

Pilgrim, M. E., **Apkarian, N.**, Milbourne, H., & O'Sullivan, M. (2021). From rough waters to calm seas: The challenges and successes of building a GTA PD program. *PRIMUS*, 31(3-5), 594-607. <https://doi.org/10.1080/10511970.2020.1793851> [Published online July 2020]

Goodchild, S., **Apkarian, N.**, Rasmussen, C., & Katz, B. (2021). Critical stance within a community of inquiry in an advanced mathematics course for pre-service teachers. *Journal of Mathematics Teacher Education*, 24, 231-252. <http://doi.org/10.1007/s10857-020-09456-2>. Available at <https://rdcu.be/b22nd> [Published online March 2020]

Tabach, M., Rasmussen, C., Dreyfus, T., & **Apkarian, N.** (2020). Towards an argumentative grammar for networking: A case of coordinating two approaches. *Educational Studies in Mathematics*, 103(2), 139-155. <https://doi.org/10.1007/s10649-020-09934-7>. Available at <https://rdcu.be/b1g44>

Rasmussen, C., **Apkarian, N.**, Tabach, M., & Dreyfus, T. (2020). Ways in which engaging in someone else's reasoning is productive. *Journal of Mathematical Behavior*, 58, 100742.

Reinholz, D. L., Matz, R. M., Cole, R., & **Apkarian, N.**, (2019). STEM is not a monolith: A preliminary analysis of variations in STEM disciplinary cultures and implications for change. *CBE—Life Sciences Education*, 18(4). <https://doi.org/10.1187/cbe.19-02-0038>

- Voigt, M., **Apkarian, N.**, Rasmussen, C., & Progress through Calculus Team. (2019). Undergraduate course variations in Precalculus through Calculus 2. *International Journal of Mathematical Education in Science and Technology*. <https://doi.org/10.1080/0020739X.2019.1636148>
- Apkarian, N.**, Kirin, D., Gehrtz, J., & Vroom, K. (2021). Connecting the stakeholders: Departments, policy, and research in undergraduate mathematics education. *PRIMUS*, 31(1), 17-36. <https://doi.org/10.1080/10511970.2019.1629135> (published online July 2019).
- Apkarian, N.**, Tabach, M., Dreyfus, T., & Rasmussen, C. (2019). The Sierpinski smoothie: Blending area and perimeter. *Educational Studies in Mathematics*, 101(1), 19-34. <https://doi.org/10.1007/s10649-019-09889-4>. Available at <https://rdcu.be/bqXod>
- Reinholz, D. L., Bradfield, K., & **Apkarian, N.** (2019). Using analytics to support instructor reflection on student participation in a discourse-focused undergraduate mathematics classroom. *International Journal of Research in Undergraduate Mathematics Education*, 5(1), 56-74. <https://doi.org/10.1007/s40753-019-00084-7>
- Rasmussen, C., **Apkarian, N.**, Hagman, J. E., Johnson, E., Larsen, S., Bressoud, D., & Progress through Calculus team. (2019). Characteristics of Precalculus through Calculus 2 programs: Insights from a national census survey. *Journal of Research in Mathematics Education*, 50(1), 98-112. <https://doi.org/10.5951/jresmetheduc.50.1.0098>
- Apkarian, N.**, Bowers, J., O'Sullivan, M. E., & Rasmussen, C. (2018). A case study of change in the teaching and learning of Precalculus to Calculus 2: What we're doing with what we have. *PRIMUS*, 28(6), 528-549. <https://doi.org/10.1080/10511970.2017.1388319>
- Reinholz, D. L., & **Apkarian, N.** (2018). Four frames for systemic change in STEM departments. *International Journal of STEM Education*, 5(3), 1-10. <https://doi.org/10.1186/s40594-018-0103-x>
- Dinsdale, E.A., Edwards, R.A., Bailey, B.A., Tuba, I., Akhter, S., McNair, K., Schmieder R., **Apkarian, N.**, Creek, M., Guan, E., Hernandez, M., Isaacs, K., Peterson, C., Regh, T., & Ponomarenko, V. (2013). Multivariate analysis of functional metagenomes. *Frontiers: Genetics*, 4(41). <https://doi.org/10.3389/fgene.2013.00041>

### Manuscripts under review

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- Apkarian, N.** & Larsen, S. (in review). Program assessment & using local data. In E. Johnson, **N. Apkarian**, K. Vroom, A. Martinez, C. Rasmussen, & D. Bressoud, (Eds.), *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.
- Sánchez Robayo, B. J., **Apkarian, N.**, Johnson, E., Alzaga Elizondo, T., Ellis, B., & Robbins, C. (in review). Institutional and departmental change: Responding to crisis. In E. Johnson, **N. Apkarian**, K. Vroom, A. Martinez, C. Rasmussen, & D. Bressoud, (Eds.), *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.
- Johnson, E., **Apkarian, N.**, Vroom, K., Martinez, A., Rasmussen, C., & Bressoud, D. (Eds.) (in revision). *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.
- Creagar, M., Wakefield, N., Smith, W. M., **Apkarian, N.**, Voigt, M. (under review). Validating the Student Instructional Practices Survey in Mathematics for measuring student experiences in introductory mathematics courses. *Submitted Spring 2021*.
- Vishnubhotla, M., Chowdhury, A., **Apkarian, N.**, Johnson, E., Dancy, M., Henderson, C., Lau, A.C., Raker, J., & Stains, M., (under review). Is IBL an instructional approach or a philosophy? *Under review at PRIMUS (Problems, Resources, and Issues in Mathematics Undergraduate Studies)*. *Submitted July 29, 2021*.
- Vroom, K., Gehrtz, J., **Apkarian, N.**, Alzaga Elizondo, T., Ellis, B., & Hagman, J. E. (in review). First-year mathematics students' perceptions of ambitious teaching. *Submitted Fall 2020*.

Yik, B. J., Raker, J. R., **Apkarian, N.**, Stains, M., Henderson, C., Dancy, M. H., & Johnson, E. (in review). Evaluating the impact of malleable factors on percent time lecturing in gateway chemistry, mathematics, and physics courses. *Submitted Spring 2021*.

### Refereed conference proceedings

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**Apkarian, N.**, Johnson, E., Raker, J. R., Stains, M., Henderson, C., Dancy, M. H. (2020). Assessing the Uptake of Research Based Instructional Strategies by Postsecondary Mathematics Instructors. In S. S. Karunakaran, Z. Reed., & A. Higgins (Eds.), *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*, pp. 18-27. Boston, MA.

Alzaga Elizondo, T., Ellis, B., **Apkarian, N.**, Sánchez Robayo, B., Robbins, C. K., & Johnson, E. (2020). Departmental change in reaction to the threat of losing calculus: Three cases. In S. S. Karunakaran, Z. Reed., & A. Higgins (Eds.), *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*, pp. 151-158. Boston, MA.

Williams, M., **Apkarian, N.**, Uhing, K., Funk, R., Smith, W. M., Wakefield, N., Martinez, A., & Rasmussen, C. (2020). In the driver's seat: Course coordinators as change agents for active learning in university Precalculus to Calculus 2. In S. S. Karunakaran, Z. Reed., & A. Higgins (Eds.), *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*, pp. 637-645. Boston, MA.

**Apkarian, N.**, & Reinholz, D. L. (2019). Understanding and enacting organizational change: An approach in four frames. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the 22<sup>nd</sup> Annual Conference on Research in Undergraduate Mathematics Education*, pp. 10-17. Oklahoma City, OK.

Vroom, K., Gehrtz, J., Alzaga Elizondo, T., Ellis, B., **Apkarian, N.**, & Hagman, J. E. (2019). First-year mathematics students' view of helpful teaching practices. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the 22<sup>nd</sup> Annual Conference on Research in Undergraduate Mathematics Education*, pp. 1055-1060. Oklahoma City, OK.

**Apkarian, N.**, Kirin, D., & Voigt, M. (2019). Course coordination patterns in university precalculus and calculus courses. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the 22<sup>nd</sup> Annual Conference on Research in Undergraduate Mathematics Education*, pp. 834-839. Oklahoma City, OK.

**Apkarian, N.**, Rasmussen, C., Tabach, M., & Dreyfus, T. (2018). Conceptual blending: The case of the Sierpinski Triangle area and perimeter. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.) *Proceedings of the 21<sup>st</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 169-184 (long paper); 541-548 (short paper). San Diego, CA.

**Apkarian, N.** (2018). Emerging instructional leadership in a new course coordinator system. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.) *Proceedings of the 21<sup>st</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 1414-1419. San Diego, CA.

Dreyfus, T., Rasmussen, C., **Apkarian, N.**, & Tabach, M. The complexity of knowledge construction in a classroom setting. *INDRUM 2018*: INDRUM Network, University of Agder, Kristiansand, Norway. [hal-01849971](https://doi.org/10.21203/rs.3.rs-1849971)

**Apkarian, N.**, Rasmussen, C. (2017). Mathematics instruction leadership in undergraduate departments. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.) *Proceedings of the 20<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 485-493. San Diego, CA.

Quardokus Fisher, K., **Apkarian, N.**, & Walter, E. (2017). Let's talk about teaching: Investigating instructors' social networks. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.)

*Proceedings of the 20<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 1214-1218. San Diego, CA.

Voigt, M., Rasmussen, C., & **Apkarian, N.** (2017). Variations in Precalculus through Calculus 2 courses. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.) *Proceedings of the 20<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 1001-1008. San Diego, CA.

Kirin, D., Vroom, K., Larsen, S., & **Apkarian, N.** (2017). Instruction in precalculus and single-variable calculus in the United States: A bird's eye view. In A. Weinberg, C. Rasmussen, J. Rabin, M. Wawro, & S. Brown (Eds.) *Proceedings of the 20<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 1267-1272. San Diego, CA.

Rasmussen, C., **Apkarian, N.**, Dreyfus, T., & Voigt, M. (2016). Ways in which engaging in someone else's reasoning is productive. In E. Nardi, C. Winsløw, & T. Hausberger (Eds.), *Proceedings from INDRUM 2016: First conference of the International Network for Didactic Research in University Mathematics*, 504-513. University of Montpellier & INDRUM: Montpellier, France.

**Apkarian, N.** (2016). Talking about teaching: Social networks of instructors of undergraduate mathematics. In T. Fukawa-Connelly, N. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the 19<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 515-518. Pittsburgh, PA.

**Apkarian, N.**, Rasmussen, C., Dreyfus, T., Voigt, M., Milbourne, H., & Gao, X. (2016). Ways in which engaging in someone else's reasoning is productive. In T. Fukawa-Connelly, N. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the 19<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 518-526. Pittsburgh, PA.

**Apkarian, N.**, & Kirin, D. (2016). Active learning in undergraduate precalculus and single variable calculus. In T. Fukawa-Connelly, N. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the 19<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 512-514. Pittsburgh, PA.

Rasmussen, C., **Apkarian, N.**, Bressoud, D., Ellis, J., Johnson, E., & Larsen, S. (2016). A national investigation of precalculus through calculus 2. In T. Fukawa-Connelly, N. Infante, M. Wawro, & S. Brown (Eds.), *Proceedings of the 19<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 1245-1251. Pittsburgh, PA.

**Apkarian, N.** (2015). Social networks among communities of undergraduate mathematics instructors at PhD granting institutions. In T. Fukawa-Connelly, N. E. Infante, K. Keene, & M. Zandieh (Eds.), *Proceedings of the 18<sup>th</sup> Annual Conference on Research in Undergraduate Mathematics Education*, 369-373. Pittsburgh, PA.

### Technical reports and white papers

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**Apkarian, N.**, Smith, W., Vroom, K., Voigt, M., Gehrtz, J., PtC Project Team, & SEMINAL Project Team. (2019). *X-PIPS-M Survey Suite*. Available: <http://bit.ly/2wwcSok>

**Apkarian, N.**, Bonds, M.D., Quardokus Fisher, K., & Burt, B. (2019). *Guide to Inclusion Awareness in the Organization of Knowledge*. Available: <http://bit.ly/33WhzHF>

**Apkarian, N.**, Kirin, D., & Progress through Calculus Team. (2017). *Progress through calculus: Census survey technical report*. Mathematical Association of America. Available: <http://bit.ly/2xcbZTV>

### Chapters in edited books

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**Apkarian, N.** & Larsen, S. (accepted). Program assessment & using local data. In E. Johnson, **N. Apkarian**, K. Vroom, A. Martinez, C. Rasmussen, & D. Bressoud, (Eds.), *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.

- Sánchez Robayo, B. J., **Apkarian, N.**, Johnson, E., Alzaga Elizondo, T., Ellis, B., & Robbins, C. (accepted). Institutional and departmental change: Responding to crisis. In E. Johnson, **N. Apkarian**, K. Vroom, A. Martinez, C. Rasmussen, & D. Bressoud, (Eds.), *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.
- Apkarian, N.** (accepted). A critical examination of undergraduate degree completion: Problematizing institutional diversity measures in STEM. In M. Voigt, J. E. Hagman, J. Gehrtz, N. Alexander, B. Ratliff, & R. Levy (Eds.), *Justice through the lens of calculus*. MAA Press.
- Rasmussen, C., **Apkarian, N.**, Donsig, A., Martinez, A., Tubbs, R., & Williams, M. (2021). Designing and implementing course coordination. In W. M. Smith, M. Voigt, A. Ström, D. Webb, & G. Martin (Eds.), *SEMINAL Student Engagement in Mathematics through an Institutional Network for Active Learning: Cases of Successful Departments* (pp. 154-167).
- Quardokus Fisher, K., & **Apkarian, N.** (2018). Instructor networks across 22 STEM departments. In C. Henderson, C. Rasmussen, A. Knaub, **N. Apkarian**, A. J. Daly, & K. Quardokus Fisher (Eds.), *Researching and Enacting Change in Postsecondary Education: Leveraging Instructors' Social Networks* (pp. 96-125). Routledge: New York, NY.

### Edited books

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- Johnson, E., **Apkarian, N.**, Vroom, K., Martinez, A., Rasmussen, C., & Bressoud, D. (Eds.) (accepted). *Addressing Challenges to the Precalculus to Calculus II Sequence through Case Studies*. MAA Press.
- Henderson, C., Rasmussen, C., Knaub, A., **Apkarian, N.**, Daly, A.J., & Quardokus Fisher, K. (Eds.), (2018). *Researching and Enacting Change in Postsecondary Education: Leveraging Instructors' Social Networks*. Routledge: New York, NY. <https://doi.org/10.1007/s40753-019-00084-7>

### Communication

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- White, K. & **Apkarian, N.** (2020, June 9). Start somewhere: Resources on equity and inclusion for STEM and higher education. [Blog post]. Retrieved from: [ascnhighered.org/ASCN/posts/dei\\_resources.html](https://ascnhighered.org/ASCN/posts/dei_resources.html)
- Apkarian, N.**, Kirin, D., Gehrtz, J., & Vroom, K. (2019, August 15). Connecting departments, policies, and RUME. [Blog post]. Retrieved from: <https://www.mathvalues.org/masterblog/connecting-departments>
- Apkarian, N.** (2019, June 13). Evaluating the educational experience in post-secondary mathematics: A new survey suite. [Blog post]. Retrieved from: <https://www.mathvalues.org/masterblog/launchings201906-apkarian>
- Apkarian, N.**, Bonds, M.D., Quardokus Fisher, K., & Burt, B. (2019, May 29). Inclusive Approaches to Reviewing Scholarship: A New Guide. [Blog post]. Retrieved from: [https://ascnhighered.org/ASCN/posts/inclusion\\_guide.html](https://ascnhighered.org/ASCN/posts/inclusion_guide.html)
- Apkarian, N.**, Kirin, D., Gehrtz, J., & Vroom, K. (2017). Math department concerns: Working to bridge the gap between goals and first steps. *MAA FOCUS, February/March*, 35-37.
- Voigt, M., **Apkarian, N.**, & Rasmussen, C. (2017). Diverging from the standard fare: Variations in the calculus curriculum. *MAA FOCUS, February/March*, 32-34.

### Manuscripts in process

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- Rasmussen, C., **Apkarian, N.**, Latona Tequida, T., & Haber, S. (in preparation). Re-encountering rate of change in differential equations: Deepening prospective teachers' understandings. [Author order TBD; reporting on students' enhanced views of  $dy/dt$  following a DE course]

Johnson, E., **Apkarian, N.**, Lau, A. C., & Dancy, M. (in preparation). Faculty views of diversity, equity, and inclusion in STEM. [*Reporting data from a survey distributed in 2020*]

Dreyfus, T., Rasmussen, C., Tabach, M., & **Apkarian, N.** (in preparation). The complexity of knowledge construction in the classroom. [*Extending on INDRUM 2018 conference paper of the same title.*]

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## ADDITIONAL SCHOLARLY ACTIVITIES

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### Invited presentations / panels

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**Apkarian, N.** (2021). Culture, change, and instruction in postsecondary mathematics. Invited keynote for *AMATYC Annual Conference*. [Scheduled October 2021].

Rasmussen, C., & **Apkarian, N.** (2021). Research on Learning and Teaching University Mathematics: Where we are and where we might go next. *Oliver Club Seminar*, Cornell University Mathematics Department. Mar 25, 2021. [Remote presentation]

**Apkarian, N.** (2021). Social network analysis and communities in mathematics education. *Colloquium*, CSU Long Beach. Mar 19, 2021. [Remote presentation]

**Apkarian, N.** (2021). Social network analysis and communities in mathematics education. *Colloquium*, Clemson University. Feb 12, 2021. [Remote presentation]

**Apkarian, N.** (2020). Departmental change. *PCRG Research Webinar*, Rutgers University Proof Comprehension Research Group. December 4, 2020. [Remote presentation]

**Apkarian, N.** (2020). Social network analysis & communities in mathematics education. *Mathematics Education Seminar*, Texas State University Department of Mathematics. October 9, 2020. Presented Virtually. San Marcos, TX. [Remote presentation].

**Apkarian, N.**, Uscanga, R., Rahman, Z., & Mesa, V. (2020). Speaking with not speaking for: Thoughtful allyship among womxn in RUME. Panel session presented at *Mentoring and Partnerships for Womxn in RUME (MPWR) 2020*. Boston, MA.

**Apkarian, N.** (2020). Assessing the Uptake of RBIS by Postsecondary Calculus Instructors. *EMST-RWI Work-in-Progress Colloquium*. University of Michigan. Ann Arbor, MI.

**Apkarian, N.** (2019). Understanding and Improving Undergraduate STEM: Social & Structural Strategies. *Florida International University, Colloquium*. Miami, FL.

**Apkarian, N.** (2019). Invited participant at *Workshop on Scaling-Up and Sustaining Efforts to Improve Student Success in General Chemistry*. American Chemical Society & Association of Public & Land-Grant Universities. Washington, D. C.

**Apkarian, N.** (2019). Keynote speaker at *UTK CoMInDS Workshop*. Sponsored by UTK College of Arts & Sciences, UTK Department of Mathematics, and UTK Office of Research and Engagement. Knoxville, TN.

**Apkarian, N.**, Hagman, J. E., Rasmussen, C., Bressoud, D., Johnson, E., Larsen, S., Gehrtz, J., Vroom, K., & Voigt, M. (2019). The Progress through Calculus project: A national study of precalculus through calculus 2 programs. Special session on NSF DUE projects at *The Joint Mathematics Meetings 2019*. Baltimore, MD.

**Apkarian, N.**, & Rasmussen, C. (2018). Mathematics instruction leadership in undergraduate departments. Special session on Research in Undergraduate Mathematics Education at *The Joint Mathematics Meetings 2018*. San Diego, CA.



**Apkarian, N., & McConnell, M.** (2017). Social network analysis in DBER and RUME: A new(ish) approach. Targeted session at the *Transforming Research in Undergraduate STEM Education (TRUSE 2017)* conference. St. Paul, MN.

**Apkarian, N.** (2017). Arguing about Sierpinski's Triangle. *California State University, Channel Islands Graduate Student Colloquium*. Camarillo, CA.

## Consulting

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Cornell University (2019-2021)

- Invited external review of / consultation for ongoing improvement efforts for Calculus 1 and Linear Algebra at Cornell University, with particular attention to the implementation of active learning and other research-based strategies to support student success in mathematics

Florida International University (2019).

- Invited consultation regarding introductory mathematics courses, particularly how to leverage the existing resources and better coordinate ongoing initiatives to support STEM majors

Johns Hopkins University (2019)

- Invited external review of Johns Hopkins University's mathematics service courses program
- Provided recommendations and rationale for increasing support and quality of first- and second-year introductory mathematics course experiences for undergraduate students

MPWR 2016 and Beyond: Fostering Sustainable Networks for Women in RUME (NSF #1553278)

- Development of social network analysis plan for assessing the impact of the Mentoring and Partnerships for Women in RUME conference
- Support for survey development, design, and distribution using Qualtrics

Assessing the Impact of Teaching Faculty in STEM Institutional Transformation (NSF #1612258)

- Consultation about the development of social network analyses to assess the impact of the teaching faculty position in the University of California system on instructional practice
- Support for analysis and interpretation of social network data using R

## Awards

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2019 Participant, *Future Faculty Development Program*. Virginia Tech Office for Inclusion and Diversity. One of 43 selected from 446 applicants. [www.inclusive.vt.edu/Programs/future\\_faculty.html](http://www.inclusive.vt.edu/Programs/future_faculty.html)

2017-18 ARCS Scholar, San Diego Chapter. Achievement Rewards for College Scientists: Advancing Science in America.

## Additional posters and presentations

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**Apkarian, N.,** Alzaga Elizondo, T., Ellis, B., Sánchez Robayo, B., Robbins, C. K., & Johnson, E. (2020). Departmental Change in Reaction to the Threat of Losing Calculus: Three Cases. Presentation in *Contributed Paper Session: Re-envisioning the Calculus Sequence of the Joint Mathematics Meetings 2020*. Denver, CO.

**Apkarian, N.,** Johnson, E., Stains, M., Raker, J. R., Dancy, M. H., Henderson, C. (2019). Awareness and Use of Research-Based Instructional Strategies in STEM. Poster presented at *AAC&U PKAL Transforming STEM Higher Education Conference*. Chicago, IL.

Dancy, M., **Apkarian, N.,** Henderson, C., Raker, J., Johnson, E., & Stains, M. (2019). Survey of physics, mathematics, and chemistry faculty. *AAPT Summer Meeting 2019*. American Association of Physics Teachers: College Park, MD.

- Apkarian, N.** (2019). Understanding and enacting math department change: An approach in four frames. Poster presented at *ASCN Transforming Institutions Conference 2019*. Accelerating Systemic Change Network: Pittsburgh, PA.
- Rasmussen, C., Hagman, J., & **Apkarian, N.** (2019). Theorizing coordination and the role of course coordinators. Poster presented at *Eleventh Congress of the European Society for Research in Mathematics Education*, Thematic Working Group 14: University Mathematics Education.
- Kerrigan, S., **Apkarian, N.**, & Johnson, E. (2019). Overview of Evaluating the Uptake of Research-Based Instructional Strategies in Undergraduate Chemistry, Mathematics, and Physics. In A. Weinberg, D. Moore-Russo, H. Soto, & M. Wawro (Eds.), *Proceedings of the 22<sup>nd</sup> Annual Conference on Research in Undergraduate Mathematics Education*, pp. 1130. Oklahoma City, OK.
- Vroom, K. **Apkarian, N.**, Gehrtz, J., Hagman, J. E., Voigt, M., Martinez, A. (2019). Students' reports of precalculus and calculus course experiences. *The Joint Mathematics Meetings 2019*. Baltimore, MD.
- O'Sullivan, M. E., **Apkarian, N.**, Reinholz, D., & Zahner, W. (2018). Transforming introductory STEM courses: Moving beyond instructional improvements. Workshop at *The 2018 Southern California (SoCal) PKAL Regional Network Meeting*. University of California, Los Angeles.
- Apkarian, N.**, Kirin, D., & Vroom, K. (2017). Active learning usage in Precalculus to Calculus 2. *The Joint Mathematics Meetings 2017*: Atlanta, GA.
- Apkarian, N.**, Rasmussen, C., Milbourne, H., & Dreyfus, T. (2016). Ways in which engaging in someone else's reasoning is productive. *Interactive paper session at NCTM Research Conference 2016*.
- Apkarian, N.** (2016). Talking about teaching: Social networks of instructors of undergraduate mathematics. *XXVI International Sunbelt Social Network Conference: Presentation and poster abstracts*, 9-10.

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## SERVICE, OUTREACH, & ENGAGEMENT

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### Project advisory roles

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Examining The Roles of STEM Teaching Faculty in Advancing the Use of Evidence-based Teaching Practices at Research Universities. NSF DUE #1821724. Advisory Board Member.

### Conference and workshop organization

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- Workshop co-organizer: *Initiating, Sustaining, and Researching Mathematics Department Transformation of Introductory Courses for STEM Majors*. Mathematical Sciences Research Institute (MSRI) workshop in the annual series, Critical Issues in Mathematics Education (CIME). April 2021\*, Berkeley, CA. (\*delayed due to COVID-19)
- Workshop co-organizer: *Learning Processes in mathematics between the whole class, small groups, and individual students*. January 2020. Tel Aviv, Israel. Israeli Science Foundation, Grants No. 438/15
- Member of local organizing committee: Annual Conference on Research in Undergraduate Mathematics Education. 2017, 2018. San Diego, CA.
- Workshop co-organizer: *Linked Education Researchers of Networks in Undergraduate STEM*. 2015-2016. San Diego, CA; Portland, OR.
- Conference co-organizer: *Precalculus to Calculus: Insights and Innovations*. June 2016. St. Paul, MN.

## Reviewing

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- National Science Foundation (NSF) panelist. 2020.
- International Journal of Research in Undergraduate Mathematics Education (IJRUME). 2018-20.
- International Journal of STEM Education. 2018-20.
- Conference on Research in Undergraduate Mathematics Education. 2015-19.
- Problems, Resources, and Issues in Mathematics Undergraduate Studies (PRIMUS). 2016-2019.

## Outreach

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- Facilitator at *Getting Started in Undergraduate Mathematics Education Research*, Project NExT session at the Joint Mathematics Meetings. Denver, CO. January 2020.
- Guest Speaker at *UCSD Undergraduate Mathematics Day*, sponsored by AWM. May 2014.
- Volunteer Mentor for *Expanding Your Horizons*, San Diego. March 2014.

## Membership in professional communities

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- Mathematical Association of America (MAA)
- Special Interest Group of the Mathematical Association of America in Research in Undergraduate Mathematics Education (SIGMAA on RUME)
- Mentoring and Partnerships for Women in RUME (MPWR), 2015-2020
- Accelerating Systemic Change Network (ASCN)
- ASCN Working Group 1: Guiding Theories of Change