

# Naneh Apkarian, PhD

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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, #1726379 | [sites.google.com/view/rbisproject/home](https://sites.google.com/view/rbisproject/home)

Postdoctoral Research Associate (2018-current)

- Project aimed to increase our understanding of the reasons why instructors of introductory mathematics, chemistry, and physics courses choose to use research-based instructional strategies or choose not to.
- Development of a survey about instructional practices, individual characteristics, and contextual features that was then sent to 17,000 instructors across the country at (associate's colleges, baccalaureate colleges, master's colleges, and doctoral universities).

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

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

Senior Personnel (2018-current), Research Assistant (2015-18)

- Design, distribution, and analysis of a national census survey of university mathematics departments about their Precalculus through Calculus 2 courses and programs
- Participation in case studies of 12 sites, including: development of interview protocols; individual and group interviews; development and distribution of surveys for instructors and students.
- Ongoing qualitative and quantitative analyses of case study data.
- Co-lead of sub-team investigating narratives of change at five participating sites, including managing graduate student research associates

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

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

Research Assistant

- Collaborative development of surveys and interview protocols, working with PtC and SEMINAL personnel to create coherent instrumentation suites for both phases of the SEMINAL project
- Analysis of Phase 1 data, with a particular focus on the role of course coordination in the change process and current function of six department which have implemented active learning already
- Informal consultation about the structure of Phase 2 of SEMINAL, including lessons learned through dissertation work

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

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

Research Assistant

- Collection of classroom video data in a masters-level course centered on the mathematics of chaos, fractals, and dynamical systems; design and conduction of individual semi-structured problem-solving interviews with students
- Qualitative analysis of classroom and interview data using different theoretically-grounded methodologies and subsequent integration of both theory and results

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

NSF DUE #1550990

Research Assistant

- Designing, planning, and running of a two-workshop series intended to accelerate knowledge development about the use of social network analysis in studying undergraduate instruction
- Co-editor and chapter co-author of resulting book about the usage of social network analysis to accelerate change at the undergraduate department level

Minor 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

- Classroom data collection in an undergraduate inquiry-oriented differential equations course
- Qualitative analysis of classroom data

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

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

Research Assistant

- Design and execution of social network oriented follow-up study of selected institutions from sites that participated in the initial CSPCC project

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

San Diego State University

Undergraduate Research Assistant

- Comparison of multiple vector space methods and discrimination models for the analysis of the metabolic activity of microbial systems through metagenomes

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## TEACHING EXPERIENCE

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### Teaching assignments

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Instructor, Department of Mathematics & Statistics, San Diego State University, 2013 – 2014  
*Elementary Number Systems* (Math 210)

Teaching Assistant, Department of Mathematics, University of California, San Diego, 2012 – 2013  
*Cryptography* (Math 187)  
*Geometric Computer Graphics* (Math 155A)  
*Linear Algebra* (Math 20F)  
*Differential Equations* (Math 20D)

### Other experience

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Co-instructor, Department of Mathematics & Statistics, San Diego State University, Fall 2016  
*Differential Equations*. Primary Instructor: Dr. Chris Rasmussen

Observer, Department of Mathematics & Statistics, San Diego State University, Fall 2014  
*Dynamical Systems*. Primary Instructor: Dr. Tommy Dreyfus

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## PUBLICATIONS

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### Journal articles

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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*.  
<https://doi.org/10.1007/s10649-020-09934-7>. Available at <https://rdcu.be/b1g44>

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

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. (2019). Connecting the stakeholders: Departments, policy, and research in undergraduate mathematics education. *PRIMUS*.  
<https://doi.org/10.1080/10511970.2019.1629135>

**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/jresematheduc.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 peer review

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Pilgrim, M. E., **Apkarian, N.**, Milbourne, H., & O'Sullivan, M. (accepted with minor revisions). From rough waters to calm seas: The challenges and successes of building a GTA PD program. *PRIMUS*. [For a special issue of *PRIMUS* focused on active learning in precalculus-calculus, we report on the first few iterations of a new graduate student teaching development program, including successes, challenges, and lessons.]

Vroom, K., Gehrtz, J., **Apkarian, N.**, Alzaga Elizondo, T., Ellis, B., & Hagman, J. E. (in review). First-year mathematics students' perceptions of ambitious teaching. [A manuscript based on survey and interview data from Phase 2 of the PtC study, which suggests that the more students experience ambitious teaching, the more likely they are to believe that non-lecture practices are helpful for their learning.]

**Apkarian, N.**, & Rasmussen, C. (in review). Instructional leadership structures across five university mathematics departments. [Using social network analysis and interview data, this paper discusses the presences of informal and formal leaders of instruction within five different yet successful mathematics departments. Factors affecting who stands out and whether or not those people have both informal and formal leadership positions are investigated.]

Goodchild, S., **Apkarian, N.**, Rasmussen, C., & Katz, B. (in review). Engaging a critical stance within a community of inquiry. [Using data from students' end-of-term portfolios and presentations, we explore the extent to which they formed a community of inquiry in the classroom and were able to develop critical stances toward mathematics study, teaching, and learning.]

### Refereed conference proceedings

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**Apkarian, N.**, Johnson, E., Raker, J. R., Stains, M., Henderson, C., Dancy, M. H. (accepted 2020). Assessing the Uptake of Research Based Instructional Strategies by Postsecondary Mathematics Instructors. In *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*. Boston, MA.

Alzaga Elizondo, T., Ellis, B., **Apkarian, N.**, Sánchez Robayo, B., Robbins, C. K., & Johnson, E. (accepted 2020). Departmental change in reaction to the threat of losing calculus: Three cases. In *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*. Boston, MA.

Williams, M., **Apkarian, N.**, Uhing, K., Funk, R., Smith, W. M., Wakefield, N., Martinez, A., & Rasmussen, C. (accepted 2020). In the driver's seat: Course coordinators as change agents for active learning in

university Precalculus to Calculus 2. In *Proceedings of the 23rd Annual Conference on Research in Undergraduate Mathematics Education*. 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.
- 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 refereed books

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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 book

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Henderson, C., Rasmussen, C., Knaub, A., **Apkarian, N.**, Daly, A.J., & Quardokus Fisher, K., (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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**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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**Apkarian, N.**, & Henderson, C. (in preparation). Reality check: What evidence is there for common assumptions about instructional practice in STEM? [*Using nationally collected survey data, a report on myth vs. reality when it comes to common assumptions related to barriers and drivers for STEM instructors in the use of RBIS*]

**Apkarian, N.**, & Kirin, D. (in preparation). What is being coordinated in a coordination system? [*A manuscript describing patterns in the nature of coordinated elements in precalculus and calculus courses across the USA, in terms of goals, assessments, and instructional approach*]

Rasmussen, C., **Apkarian, N.**, Donsig, A., Martinez, A., Tubbs, R., & Williams, M. (in preparation). Designing and implementing course coordination. [*Chapter about the role of course coordination in the implementation of active learning in introductory mathematics courses. To be published in a text describing lessons learned from Phase 1 of SEMINAL.*]

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## ADDITIONAL SCHOLARLY ACTIVITIES

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### Invited presentations / participation

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**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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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

Cornell University (2019-2020)

- 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

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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### Conference and workshop organization

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- 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). 2018-19.
- International Journal of STEM Education. 2018-19.
- 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)
- Accelerating Systemic Change Network (ASCN)
- ASCN Working Group 1: Theories of Change