

Robert Paul Dalka

Contact Information	<i>Website:</i> robdalka.com <i>Academic email:</i> rpdalka@umd.edu <i>Personal email:</i> rpdalka@gmail.com
Education	University of Maryland , College Park, MD Sept. 2019 – May 2024 (<i>expected</i>) Ph.D., Physics Dissertation Title: <i>Developing methods and theories for modeling student leadership development and students' experiences of academic support</i> University of Michigan , Ann Arbor, MI Sept. 2015 – May 2019 B.S., Physics, <i>High Honors</i> Minor, Computer Science Undergraduate Dissertation Title: <i>Writing-to-Learn Physics: Helping Students Understand Energy Systems</i>
Research Appointments	Graduate Research Assistant June 2020 – Present Advisor: Chandra Turpen, <i>University of Maryland, Department of Physics</i> <ul style="list-style-type: none">• Contributed to large-scale survey development and analysis and ethnographic methods as part of a larger project with the American Physical Society.• Developed innovative and unique method of network analysis that can be used to analyze Likert-style surveys.• Created model for cultivating capacity for change through shared leadership and relational agency to study and support student-centric teams.• Mentored undergraduate students as part of our research team. Undergraduate Research Assistant May 2018 – August 2019 Advisor: Timothy McKay, <i>University of Michigan, Department of Physics</i> <ul style="list-style-type: none">• Designed and carried out a study focused on how peer review contributed to students' conceptualization of physics concepts. Analyzed student writing through thematic qualitative and natural language processing techniques.
Awards and Fellowships	National Science Foundation Graduate Research Fellowship 2021 NIST Professional Research Experience Program 2021, 2022 Ralph Myers & Friends of Physics Award, Honorable Mention 2020 High Honors, Senior Thesis 2019
Instructional Experience	Graduate Teaching Assistant Spring 2023 Contributed to instructional team for a Modern Physics course. Led group-based office hours, designed review sessions, graded problem sets, coordinated group discussion during classes, led lectures for Special Relativity, and mentored two undergraduate teaching assistants. Instructor of Record Fall 2022 Designed and taught undergrad and graduate seminar in Physics Education Research. Graduate Lab Teaching Assistant Fall 2019 - Fall 2020 Led two discussion and lab sections (24 students each) of introductory physics for life sciences over three semesters.

Leadership

(2023 – Present) Core Organizer, *Access Network*. Coordinate communication within the organization to sustain student leadership teams, evaluate student outcomes and experiences related to organizational mission, and contributed to grant writing for programmatic and research projects.

(2019 – Present) Program Manager, *Graduate Resources for Advancing Diversity with Maryland Astronomy and Physics*. Coordinated with faculty, staff, and other graduate students to organize the Winter Workshop and Summer Scholars programs. Mentored student in Winter Workshop network science project. Helped to plan and run Python workshop to teach students programming skills.

(2022 – 2023) Publicist, *Physics Education Research Consortium of Graduate Students*. Ensure communication with PER Graduate students through avenues such as email announcements, newsletters, and social media notifications.

(2020 – 2022) Physics Representative, *Graduate Student Government*. Advocated and worked to represent physics graduate students to the larger graduate school. Served on both the Legislative Action Committee and the ad hoc Polis Committee.

(2020 – 2021) Committee Chair, *UMD Physics Graduate Committee*. Represent graduate student interests to the Physics Department. Planned community events for physics graduate students.

(2019 – 2021) Program Manager, *Kids Excelling in Math and Science*. Manage operations of organization, such as writing grants, coordinating with school administrators, and leading team of student mentors. Guide students at Hyattsville Middle School in after school activities related to Math, Science, and Science Policy.

(2016 – 2019) Executive Board Member, *Students for Clean Energy*. Curated events including speaker series, educational tours, and campus engagement events. Participated in and organized climate and science rallies. Contributed to proposals that influenced university energy policy, resulting in significant investment into energy efficiency upgrades and a power purchase agreement with wind farms in the state of Michigan.

Mentorship

Sarah Rinker Fall 2022 – Summer 2023
Undergraduate Student
Research Project: Departmental Action Leadership Institute
Program Affiliation: Independent Research Assistant

Bryan Rezende Spring 2023
Undergraduate Student
Teaching Assignment: Modern Physics
Program Affiliation: Undergraduate Teaching Assistant

Elise Fiala Spring 2023
Undergraduate Student
Teaching Assignment: Modern Physics
Program Affiliation: Undergraduate Teaching Assistant

Shane Amare Summer 2021
Undergraduate Student
Research Project: Effective Practices for Physics Programs, Chairs Survey
Program Affiliation: Toolkit for Success

Sarah Waldych Summer 2021
Undergraduate Student
Research Project: Effective Practices for Physics Programs, Chairs Survey
Program Affiliation: Toolkit for Success

Paulson Obiniyi Jr. January 2021
Undergraduate Student
Research Workshop: Network Analysis
Program Affiliation: GRAD-MAP

Publications

Journal Articles (refereed)

R.P. Dalka, D. Shafer, B. Gutmann, and C. Turpen, “Developing students’ agency for equity work in STEM through interactive shared leadership”, *in preparation*.

D. Sachmpazidi, C. Turpen, J. Petrella, **R.P. Dalka**, and F. Abdurrahman, “Recognizing Dominant Cultures around Assessment and Educational Change in Physics Programs”, *under review*.

R.P. Dalka and J.P. Zwolak, “Network analysis of graduate program support structures through experiences of various demographic groups”, *under review*.

R.P. Dalka, D. Sachmpazidi, C. Henderson, and J.P. Zwolak, “Network analysis approach to Likert-style surveys”. *Physical Review Physics Education Research* 17.1 (2022), 10.1103/PhysRevPhysEducRes.18.020113

Conference Proceedings (refereed)

R.P. Dalka, C. Turpen, D. Craig, J. C. Corbo, D. Sachmpazidi, F. Abdurrahman, “Considering the Departmental Action Leadership Institute as a Community of Transformation: What’s highlighted and what’s missed?”, in *Physics Education Research Conference 2023*, (Sacramento, CA, 2023). 10.1119/perc.2023.pr.Dalka

F. Abdurrahman, C. Turpen, D. Sachmpazidi, and **R.P. Dalka**, “A case study of tensions in student-faculty partnerships for departmental change work”, in *Physics Education Research Conference 2023*, (Sacramento, CA, 2023). 10.1119/perc.2023.pr.Abdurrahman

R.P. Dalka, D. Shafer, B. Gutmann, and C. Turpen, “STEM students leading cultural change: How agency and capacity for collective action are cultivated within a distributed network”, in *American Society for Engineering Education*, (Baltimore, MD, 2023). <https://sftp.asee.org/44249>

R.P. Dalka, J.C. Corbo, D.A. Craig, and C. Turpen, “Exploring faculty’s explanations of enrollment issues: where does responsibility and control reside?”, in *Physics Education Research Conference 2022* (Grand Rapids, MI, 2022) 10.1119/perc.2022.pr.Dalka.

J.C. Corbo, D.A. Craig, **R.P. Dalka**, and C. Turpen, “Introducing the Departmental Action Leadership Institute and its preliminary outcomes”, in *Physics Education Research Conference 2022* (Grand Rapids, MI, 2022) 10.1119/perc.2022.pr.Corbo.

D. Sachmpazidi, C. Turpen, and **R.P. Dalka**, “Changing the culture: Documenting shifts in a department’s norms around data use”, in *Physics Education Research Conference 2022* (Grand Rapids, MI, 2022) 10.1119/perc.2022.pr.Sachmpazidi

R.P. Dalka and T. McKay, “Investigating the mechanisms of peer review”, in *Physics Education Research Conference 2019* (Provo, UT, 2019) 10.1119/perc.2019.pr.Dalka.

Other Publications

R.P. Dalka, J.P. Zwolak, D. Sachmpazidi, and C. Henderson *Network analysis to*

investigate physics programmatic survey results. Applied and Computational Mathematics Division: Summary of Activities for Fiscal Year 2022, pp. 127-128 (2023). 10.6028/NIST.IR.8423

R.P. Dalka and J.P. Zwolak *A modular analysis of demographic institutional networks.* Applied and Computational Mathematics Division: Summary of Activities for Fiscal Year 2022, pp. 126-127 (2023). 10.6028/NIST.IR.8423

R.P. Dalka, J.P. Zwolak, D. Sachmpazidi, and C. Henderson *Physics Education Survey Validation Through a Network Analytic Approach.* Applied and Computational Mathematics Division: Summary of Activities for Fiscal Year 2021, pp. 136–137 (2022). 10.6028/NIST.IR.8423

R.P. Dalka and J.P. Zwolak, *Restoring Organizational Structure Using Projected Ego-Centric Networks.* Applied and Computational Mathematics Division: Summary of Activities for Fiscal Year 2021, pp. 137–138 (2022). 10.6028/NIST.IR.8423

S. Chasteen, J.C. Corbo, **R.P. Dalka**, and C. Turpen. *Results from the 2020 EP3 Survey to Physics Department Chairs: External Report.* Tech. Rep.(American Physical Society, 2020).

Presentations

Invited Talks

R.P. Dalka (with C. Turpen, J. Corbo, S. Frederick, and S. Chasteen), “Results from the 2020 EP3 Survey to Physics Department Chairs.” American Association of Physics Teachers National Summer Meeting. Virtual. July 31 - Aug. 4, 2021.

Contributed Talks

R.P. Dalka, C. Turpen, D.A. Craig, J.C. Corbo, D. Sachmpazidi, and F.A. Abdurrahman, “Considering the Departmental Action Leadership Institute as a community of transformation: What’s highlighted and what’s missed?,” American Association of Physics Teachers National Summer Meeting. Sacramento, CA. July 2023.

D. Sachmpazidi, C. Turpen, J. Patrella, **R.P. Dalka**, and F.A. Abdurrahman, “Recognizing dominant cultures around assessment and educational change in physics programs and apprenticing into alternatives,” American Association of Physics Teachers National Summer Meeting. Sacramento, CA. July 2023.

C. Turpen, P.R. Banner, **R.P. Dalka**, E. Fiala, and B. Rezende, “Disrupting competitive science culture through deliberate instructional policies and practices in a Modern Physics course,” American Association of Physics Teachers National Summer Meeting. Sacramento, CA. July 2023.

R.P. Dalka, C. Turpen, D. Shafer, and B. Gutmann, “STEM students leading cultural change: How agency and capacity for collective action are cultivated within a distributed network,” American Society for Engineering Education Conference. Baltimore, MD. July 2023.

R.P. Dalka, C. Turpen, J.C. Corbo, D.A. Craig, and K. Svinarich, “Bridging research and practice: How the EP3 Initiative supports faculty uptake of departmental change strategies,” Accelerating Systemic Change Network (ASCN) Transforming Institutions Conference. Minneapolis, MN. June 2023.

R.P. Dalka, D. Sachmpazidi, C. Turpen, “Team-based approaches to programmatic resources: Who the Guide really guides,” American Association of Physics Teachers National Summer Meeting. Grand Rapids, MI. July 2022.

J. Corbo, D. Craig, **R.P. Dalka**, S. Frederick, and C. Turpen, “Supporting departmental change efforts in physics with departmental action leadership institutes (DALIs).”

Accelerating Systemic Change Network (ASCN) Transforming Institutions Conference. Virtual. June 2021.

S. Chasteen, J. Corbo, **R.P. Dalka**, S. Frederick, and C. Turpen, "Physics department culture of assessment and change: results from the EP3 chairs survey." Accelerating Systemic Change Network (ASCN) Transforming Institutions Conference. Virtual. June 2021.

S. Frederick, J.C. Corbo, **R.P. Dalka**, C. Turpen, and S. Chasteen, "Cultures of assessment and change in U.S. physics departments," Cross-Disciplinary-Based Education Research (X-DBER) Conference 2021. Virtual, March 2021.

R.P. Dalka, J. Corbo, S. Frederick, C. Turpen, and S. Chasteen, "Prevalence and Nature of Threats Facing U. S. Physics Departments." American Association of Physics Teachers National Winter Meeting. Virtual. Jan. 2021.

S. Frederick, J.C. Corbo, **R.P. Dalka**, C. Turpen, and S. Chasteen, "Cultures of assessment and change in U.S. physics departments," American Association of Physics Teachers National Winter Meeting. Virtual. Jan. 2021.

R.P. Dalka, "Critical Reflections on Sharing Stories from a Physics Community," American Association of Physics Teachers National Summer Meeting. Virtual. July 2020.

R.P. Dalka and T. McKay, "Observing students revise their understanding through writing," American Association of Physics Teachers National Summer Meeting. Provo, UT. July 2019.

R.P. Dalka and T. McKay, "Writing To Learn Assignments in Introductory Physics," Michigan Chapter of the Association of Physics Teachers Fall Meeting. Traverse City, MI, Oct. 2018.

Posters

R.P. Dalka, C. Turpen, D.A. Craig, J.C. Corbo, D. Sachmpazidi, and F.A. Abdurrahman, "Considering the Departmental Action Leadership Institute as a community of transformation: What's highlighted and what's missed?," Physics Education Research Conference. Sacramento, CA. July 2023.

R.P. Dalka, C. Turpen, D. Sachmpazidi, and F.A. Abdurrahman, "Considering the implications of communities of transformation as a lens into the Departmental Action Leadership Institute," American Association of Physics Teachers National Summer Meeting. Sacramento, CA. July 2023.

R.P. Dalka, J.C. Corbo, D.A. Craig, and C. Turpen, "Departmental Action Leadership Institute: faculty members' development of effective change leadership," Cross-disciplinary-based education research (X-DBER) conference 2023. Virtual, April 2023.

R.P. Dalka and J.P. Zwolak, "Gendered comparison of NIST organizational networks," National Institute of Standards and Technology, Information Technology Laboratory Science Day. Online. Oct. 2022.

R.P. Dalka, J.C. Corbo, D.A. Craig, and C. Turpen, "Exploring faculty's explanations of enrollment issues: where does responsibility and control reside?," Physics Education Research Conference. Grand Rapids, MI. July 2022.

D. Sachmpazidi, C. Turpen, and **R.P. Dalka**, "Changing the culture: documenting shifts in a department's norms around data use," Physics Education Research Conference. Grand Rapids, MI. July 2022.

J.C. Corbo, D.A. Craig, **R.P. Dalka**, and C. Turpen, "Introducing the Departmental

Action Leadership Institute and its preliminary outcomes,” Physics Education Research Conference. Grand Rapids, MI. July 2022.

R.P. Dalka, F. Abdurrahman, and C. Turpen, “Students’ roles in faculty-student partnerships,” American Association of Physics Teachers National Summer Meeting. Grand Rapids, MI. July 2022.

R.P. Dalka, D. Sachmpazidi, C. Henderson, and J.P. Zwolak, “Network analysis of Likert-style surveys,” American Association of Physics Teachers National Summer Meeting. Grand Rapids, MI. July 2022.

R.P. Dalka, D. Sachmpazidi, J.C. Corbo, D.A. Craig, and C. Turpen, “Growing as a change agent: Slowing down and facilitating teams,” American Association of Physics Teachers National Summer Meeting. Grand Rapids, MI. July 2022.

R.P. Dalka and A. Gupta, “Scaffolding Collective Reflection in a Physics Education Research Group,” Physics Education Research Conference. Virtual. July 2020.

R.P. Dalka and T. McKay, “Investigating the mechanisms of peer review,” Physics Education Research Conference. Provo, UT. July 2019.

R.P. Dalka and T. McKay, “An Exploration into Student Conceptions in Physics through Writing Activities,” American Association of Physics Teachers National Winter Meeting. Houston, TX. Jan. 2019.