Curriculum Vitae for Dr. Michael Jackson

Interim President
New Mexico Institute of Mining and Technology

EDUCATION

- New Mexico State University. PhD in Physics (1998).
- State University of New York at Oswego. BS (Magna Cum Laude) in Physics and Applied Mathematics (1992).

DISSERTATION TITLE

"Far-Infrared Laser Stark Spectroscopy of CD_3F, PH_3, CH_3OH, $^{13}CH_3OH$ and $^{13}CD_3OD$" (1998).

PROFESSIONAL HISTORY

- 2025 – Present Interim President
  (Acting/Interim: July 2025 – Present)
- 2022 – 2025 Provost and Vice President of Academic Affairs
  (Interim: August 2022–Dec. 2023; 'Provost': August 2024–July 2025)
- 2021 – 2022 Associate Vice President of Academic Affairs
  Professor, Department of Physics
  New Mexico Institute of Mining and Technology, Socorro, NM 87801
- 2015 – 2021 Founding Dean, College of Science and Technology
  Professor, Department of Physics
  Millersville University of Pennsylvania, Millersville, PA 17551
- 2007 – 2015 Professor, Department of Physics
  Central Washington University, Ellensburg, WA 98926
- 2007 – 2013 Chairperson, Department of Physics
  Central Washington University, Ellensburg, WA 98926
- 2006 – 2007 Interim Chairperson, Department of Physics
  University of Wisconsin-La Crosse, La Crosse, WI 54601
- 2005 – 2007 Professor, Department of Physics
  University of Wisconsin-La Crosse, La Crosse, WI 54601
- 2002 – 2005 Associate Professor, Department of Physics
  University of Wisconsin-La Crosse, La Crosse, WI 54601
- 1999 – 2002 Assistant Professor, Department of Physics
  University of Wisconsin-La Crosse, La Crosse, WI 54601
- 1998 – 1999 Assistant Professor, Department of Math and Physics
  State University of West Georgia, Carrollton, GA 30118
- 1997 – 1998 Academic Staff Lecturer, Department of Physics
  University of Wisconsin-La Crosse, La Crosse, WI 54601

ACADEMIC AWARDS AND HONORS

- Fellow, American Physical Society (2023).
- College of the Sciences Collaboration Award (for the Science Talent Expansion Program) (2015).
- Fellow, American Association of Physics Teachers (2014).
- College of the Sciences Collaboration Award (for Science Phase II Planning Committee) (2014).
- 2013 Outstanding Undergraduate Science Teacher Award, Society for College Science Teachers (2013).
- David Halliday and Robert Resnick Award for Excellence in Undergraduate Physics Teaching, American Association of Physics Teachers (2013).
- Undergraduate Mentor of the Year, SOURCE 2013.
- Crystal Apple Award, Professional Education Advisory Board, Central Washington University (2011–2012).
- "Volunteer of the Year," Council on Undergraduate Research, 2010–2011 and 2008–2009.
- Received "For Innovation in the Teaching of Physics" award from the Wisconsin Association of Physics Teachers (2006).
- Selected as a recipient for a CSAH Research Mentor Fellowship (three faculty members in the College of Science and Allied Health were selected for this award) (2004–2005).
- Member of the UW-L Physics Department, Recipient of the 2004 Regents Teaching Excellence Award for a Department from the UW-System Board of Regents.
- Selected for a Two Year Extension for Special Creativity award from the National Science Foundation (this is listed again in the Research Grants Funded [External] section).
- Faculty advisor for an "Outstanding SPS Chapter," selected by the national office of the Society of Physics Students for the 2003–2004 and 2002–2003 academic years.
- Received the Brian Andreen Cottrell College Science Award, Research Corporation (2002).
- "Outstanding Professor of the Year," presented by the Residence Hall Association Council, University of Wisconsin-La Crosse (1997–1998).

SABBATICALS

- 2013–2014: Central Washington University
- 2005–2006: University of Wisconsin-La Crosse

LEADERSHIP

New Mexico Institute of Mining and Technology

- Interim President (July 2025–Present). In this role, I am responsible for:
  - serving as the primary representative for New Mexico Tech. That includes collaboratively developing our vision and goals along with communicating them to various internal (e.g., students, faculty, staff) and external (e.g., Board of Regents, alumni, donors, state and federal agencies) constituencies. I assist with fundraising, maintaining community relations, and advocating for the institution. I also work with members of the campus community to provide administrative oversight of campus operations (e.g., financial, planning) so that we can effectively deliver our academic programs, meet our research objectives, and serve the people of New Mexico as its STEM Research institution.
- Provost and Vice President of Academic Affairs (August 2022–July 2025) and Associate Vice President of Academic Affairs (2021–2022). In this role, I was responsible for:
  - The Division of Academic Affairs has two academic colleges, the College of Arts and Sciences and the College of Engineering, that house a combined 14 departments. There are over 110 tenure-line faculty, approximately 20 full-time instructors, and additional part-time faculty hired on an as-needed basis. About 90% of our full-time faculty have their disciplinary terminal degree.
  - NMT offers two Associate degrees, 29 Baccalaureate degrees, 26 Master-level degrees, and 13 Doctoral degrees that serve approximately 900 degree seeking undergraduate students and 490 degree seeking graduate students. A complete listing of all degrees, minors, and certificates is available in our academic catalog.
  - As Chief Academic Officer, I was responsible for overseeing all aspects of the Division. This includes reviewing division needs, preparing budget requests and justifications, administering resource allocations; personnel reviews; strategic planning and implementation of action plans; collaboratively working with offices across campus to accomplish a range of activities for the Division and Institution; generating reports, processing paperwork, attending meetings, and other celebratory events, welcoming students, colleagues, visitors, donors, and friends of the university.
  - lead (2021-2023) and assist with NMT's accreditation efforts. This includes serving as the institution's Accreditation Liaison Officer (ALO) to the Higher Learning Commission (HLC), notifying the HLC of curricular changes (through inquiry approval, substantive change forms, and when necessary institutional responses), preparing accreditation documents (e.g., Quality Improvement Initiative [QI^2] Task Force, Chairperson; institutional updates), and ensuring compliance with other external groups (e.g., NC-SARA). The latter includes submitting annual reports on Distance Education students and out-of-state placements to NC-SARA along with developing a process to update annually our Professional Licensure information found on NMT's Consumer Protection page (2022 and 2023).
  - supporting student success. This includes serving as the primary point of contact for student academic appeals, academic honesty cases, formal student complaints and other academic concerns (2021-2023) while supporting efforts to engage students (e.g., Dropout Detective).

- serving on academic committees (e.g., Assessment Task Force, co-chairperson; assist with reviewing annual reports and developing institutional report), contributing to strategic planning and policy development related to Academic Affairs (e.g., Preferred Name Policy), and assisting transdisciplinary program coordinators & directors (e.g., Master of Science Teaching, Transdisciplinary Cybersecurity).
- supporting programs within Academic Affairs related to professional development (primarily for faculty, such as our annual Faculty and Staff Professional Development Week), recruiting and marketing initiatives, institutional collaborations (e.g., affiliation and articulation agreements, visits to other campuses and hosting visiting delegations).
- maintaining faculty-related professional activities (e.g., conducting and disseminating research, applying for extramural funding).

Millersville University

- Founding Dean, College of Science and Technology (2015–2021)
  - The College is comprised of nine academic departments (Applied Engineering, Safety & Technology [AEST]; Biology; Chemistry; Computer Science; Earth Sciences; Geography; Mathematics; Nursing; and Physics), one interdisciplinary program (Emergency Management), and two centers/institutes (Center for Disaster Research and Education; Watershed Education Training Institute [WETi]).
  - As Founding Dean, I was responsible for ensuring a smooth and successful transition from the prior School structure (School of Mathematics and Science) into a new College format that included the addition of two departments (AEST and Geography).
  - The College has approximately 100 full-time tenured/tenure-track faculty, 55 temporary (mostly part-time) faculty, and 20 full-time equivalent staff. Academic programming includes about twenty undergraduate majors (excluding options), thirty minors, several undergraduate and graduate certificates, masters degrees in five areas, and one professional doctoral degree.
  - Responsible for overseeing all aspects of the College: from providing the College's vision to ensuring day-to-day operations continue regardless of what arises (e.g., managing faculty/staff/student/parent concerns, successfully navigating COVID-19, 2016 APSCUF strike in PASSHE). This includes preparing budget requests, budget justifications, and position justifications for the College along with administering College cost centers, strategic planning and implementation of action plans, collaboratively working with offices across campus to accomplish a range of activities such as marketing and promoting the College and its academic programs (e.g., photography and videography, student/faculty/staff profiles, cut sheets, brochures), generating reports, reviewing requests, and processing forms (e.g., sustainability plans, faculty and staff leave requests, vehicle and travel requests), attending meetings, ceremonies, and other celebratory events (e.g., Sigma Theta Tau Honor Society chapter, Xi Chi), welcoming students, colleagues, visitors, donors, and friends of the university (e.g., Admitted Student Expo, Open Houses, Tribute on the Green).

  Examples of responsibilities and key accomplishments include:
  - Personnel and Financial Affairs:

- Promotion (and at times facilitation) of faculty development workshops (e.g., NSF Workshop for PASSHE, PASSHE Faculty Professional Development Council grant writing workshop, President's Leadership Institute, Center for Academic Excellence programs [e.g., Science Writing Workshops], individual faculty/staff/student support for conferences and workshops, ad-hoc events [e.g., New Faculty Orientation–Reappointment, forthcoming workshop entitled "Research to Start-up (and everything in between)" offered in collaboration with Ben Franklin Technology Partners of Central & Northern PA]);
- Annually conduct personnel reviews of faculty and staff within the College (e.g., for the 2019–2020 academic year, I conducted reviews of tenure-track faculty (20), temporary faculty (55), post-tenure faculty reviews (15), faculty promotions (11), and staff reviews (2), along with evaluating the reviews conducted by supervisors I oversee for the remaining staff within the College);
- Manage faculty complement and workload assignments, including reallocation of positions based on enrollment demand (e.g., hired nearly 30 full-time tenure-track faculty within the College, consistent with the number of retirements over this period, along with multiple part-time faculty and several staff);
- Ensure compliance with the Collective Bargaining Agreement, University, and PASSHE policies (e.g., degree requirements, job postings, hiring proposals, faculty load, individualized instruction, independent studies);
- Collect, disseminate, and use data for decision making and to communicate why decisions are made (e.g., PASSHE data, Institutional Research Dashboards and Fact Books, course/program enrollment and degree data, EMSI reports, EAB resources); and
- Facilitate grant submissions (e.g., letters of commitment, process questions, OnBase submission process), secure and distribute funding for equipment and renovation of laboratory and teaching spaces.

o Curricular Offerings, Development, Assessment, and Review:
- Review, modify if necessary, and approve course schedules for the College, manage waitlists and seat reservations, and ensure there are general education pathways for online degree completion students;
- Regularly assess enrollments with departments using data (e.g., student to faculty ratios, student credit hour production, first to second year retention) with an emphasis on discussing low-enrolled courses and programs, potential degree initiatives, restructuring or eliminating degree programs and courses;
- In collaboration with Institutional Research, oversee the program review and annual assessment of student learning outcome (SLO) for degree programs within the College (includes providing reviews and assisting departments with creating acceptable SLOs and approving their annual reports);
- The curriculum planning and review process for new programs includes the development of a framework proposal that undergoes an expedited internal review prior to a PASSHE-level review. Once approved, the full degree proposal is developed and reviewed through our internal standard Curriculum Approval Process (CAP). For new degree proposals, I assist with their development, particularly with PASSHE's forms and the formulation/analysis

of the program's budget, enrollment projections, and market demand analysis. Examples include:

- Assist with the development of new undergraduate degree program proposals (e.g., Information Technology, Healthcare Analytics option; Multidisciplinary Studies in _____, Bachelor of Science; Sub-baccalaureate certificate in Population Health [developed in collaboration with Lancaster General Health/Penn Medicine]);
- Review and facilitate new program proposal submissions (e.g., Bachelor of Science degrees in Manufacturing Engineering Technology, Packaging Engineering Technology, Emergency Management, Environmental and Spatial Sciences, accelerated graduate degree programs such as the MS degree programs in Emergency Management and Nursing).

- Conduct decanal analysis (review of financial impact and pre-requisite structure – not content) for all College courses and programs (new and revisions);
- Support the University's accreditation process, that includes contributing to a successful Middle States visit (Fall 2020);
- Support the accreditation [or certification] process for degree programs within the College:
  - Accreditation Board for Engineering and Technology: Computer Science (Computing Accreditation Commission) and Occupational Safety & Environmental Health (Applied Science Accreditation Commission);
  - American Chemical Society: Chemistry [degree certification];
  - Association of Technology, Management, and Applied Engineering: Applied Engineering and Technology Management;
  - Commission on Accreditation for Respiratory Care: Respiratory Therapy;
  - Commission on Collegiate Nursing Education: Nursing;
  - Council for the Accreditation of Educator Preparation: teacher education programs within the College (this effort is led by the College of Education and Human Services).
- Develop articulation and affiliation agreements (e.g., typically over 20 annually for clinical placement in healthcare facilities, equipment donations, shared programs, transfer articulations, accelerated degree programs).

- Advancement of Student Success Initiatives:
  - Promote and support University initiatives (e.g., Open Resource Textbook initiative, Mentorship at Millersville initiative, 30 to graduate campaign);
  - Facilitate peer mentoring initiatives within the College (e.g., Chemistry Peer Learning Hours that increased student participation at a lower cost);
  - (Re)Implement Chemistry Placement Exam and preparatory course, CHEM 110 (e.g., reducing DFW rates in the introductory chemistry course for STEM majors from over 30% to 20%);
  - Expand our math placement efforts (e.g., internal Math Placement Exam) to include ALEKS (Assessment and Learning in Knowledge Spaces) to provide students online access to placement testing and potentially improve scores. Includes promoting the ongoing assessment of these instruments; and

        - Support the Pre-Scholars Summer Institute (PSSI), a University-level effort focused on academic, community, and interpersonal skill development in a highly structured and highly supportive environment. Students participate in a four week program, from July to start of freshmen orientation, with academic assistance provided in several core areas including those taught by faculty in the Department of Mathematics.
    - Facilitation, promotion, and support of Diversity, Equity, and Inclusion efforts such as:
        - Initiatives (e.g., creating and sustaining programs such as Biology Mentorship Program [includes successfully nominating Dr. Brent Horton's program for the *2018 Inspiring Programs in STEM Award* by Insight into Diversity magazine], MU Chapter of ADSE Super, Academic Alliance membership in the National Center for Women & Information Technology, Safe Zone Mentor Training [also participated]);
        - Events (e.g., live performances of *No Belles*, *Forging Frontiers: Women Leaders in STEM*, *HEDY! The Life & Inventions of Hedy Lamarr*, screening and panel discussions of *Hidden Figures*, *Journal to Normal*);
        - Fundraise for scholarship endowments (e.g., newly established *Joyce Denelsbeck King '83 Scholarship for Women in STEM*); and
        - Demonstrate the University's EPPIIC values through communications and participation in and/or support of events (e.g., Digital Quilt, Pre-Scholars Summer Institute, Recognition Ceremony for Graduating Students of Color).
    - Fundraising, in collaboration with our Advancement Office (and my assigned liaison):
        - Cultivate prospects and maintain essential donor relations in support of the University's Fundraising efforts (e.g., One Day Give and Imagine the Possible Campaign focused on Student Experiences and Student Scholarships);
        - Meet with donors and friends of the university (online, on-campus, and off-campus visits), prepare annual reports and communications (for both targeted and mass distribution), send personalized 'Thank You' cards, engage donors through the College's Advancement Advisory Board, prepare EITC proposals to expand corporate sponsorships of events; and
        - Facilitate receiving over $7 million from individual contributions, corporate matching gifts, corporate sponsorships of College events, and bequests.
    - Academic Concerns:
        - Responsible for expeditiously addressing concerns (academic and non-academic) from all constituents (faculty, staff, students, and parents);
        - Assist with resolving academically related questions including course equivalencies, grade appeals, academic honesty, exceptions to graduation, interpretation of policy, etc;
        - Assist offices across campus (e.g., Title IX) in communicating and at times resolving issues that come forward;
        - Assist Human Resources in conducting formal and informal investigations (e.g., CBA, Article 42: Investigations of Complaints Against Faculty Members); and
        - Assist with addressing a range of problems including cajoling colleagues (even those in PASSHE) to ensure paperwork moves forward, answering advising inquiries, offering guidance to individuals on how to have difficult

conversations, providing guidance on hosting campus events, submitting help desk tickets for IT failures and work orders for facilities issues, etc.

- Advocate, Facilitate for, and Support Academic and Outreach Programs:
  - College outreach programs: annual (e.g., Summer Science Training Program, Brossman-Frisbie Science Lectureship and Science Knowledge Competition Examination, Pennsylvania Central Region Science Olympiad, Glenna Hazeltine Women in Mathematics, Science, and Technology Conference) and one-time (e.g., March for Science) programs;
  - Department outreach programs (e.g., High School Mathematics Competition, AP Calculus and Statistics practice exams, Commonwealth of Pennsylvania University Biologists annual meeting, annual Pennsylvania Association of Computer and Information Science Educators conference);
  - Student initiatives (e.g., *The Oculus* [written by students to communicate, highlight, and promote the research being done by other students and their faculty at Millersville University], Manakin Coloring Book [based on research collected as part of an NSF grant], forthcoming *Day of STEM* meeting); and
  - Other programs (e.g., successfully advocated for creation of the Mentored Undergraduate Summer Experience (MUSE) program, provided faculty development funds to supplement MUSE awards, initiated the College Undergraduate Travel Fellowship program and supported the annual Dr. Edward C. Shane College of Science and Technology Undergraduate Research Recognition Symposium).

<u>Committee Leadership</u>

- Fall Implementation Planning Team, tasked with developing reopening procedures for campus (2020):
  - Co-chairperson, Implementation Team: Specialized Spaces
  - Chairperson, Implementation Team: Research
- Chairperson, Search Committees
  - Associate Vice President for Grants, Sponsored Projects, and Research (formerly Executive Director of Grants & Contracts) (2019–2020);
  - Associate Provost for Academic Administration (2017–2018);
  - Director of Institutional Research (2016–2017).
- Co-chairperson, Millersville University and Penn Medicine Lancaster General Health Population Health Working Group (2018–2019)
  - Developed framework for Population Health Multi-Disciplinary Studies Bachelor of Science degree program, Population Health sub-baccalaureate certificate, and potential collaborations between Millersville University and the Lancaster General Health Research Institute.
- Chairperson, SCTE Advancement Advisory Board (2015–2021).

Central Washington University

- Department Chairperson (2007–2013). Key accomplishments include:
  - Enrollment Management: In 2007, there were about 20 physics majors. I spearheaded a variety of departmental curricular reforms and recruitment efforts that led to a

sustained increase in enrollment with over 70 physics majors in five years. Since the 2011–2012 academic year, the CWU physics department has had double digit graduation numbers, which is about twice the national average for schools of our size, and a high of 19 physics graduates during the 2013–2014 academic year.

- Physics representative for the Science Phase II facility design and construction project (2007–2013). This new facility ($67 million project) houses the physics and geological science departments along with the Center for Excellence in Science and Mathematics Education. My role on this committee included all three major phases (pre-design, design, and construction documents) and I was a critical in advocating for the facility to members of the WA state legislature and CWU administration. Full funding was secured for this facility, despite being initially awarded a lower amount.
- Mentoring and supervision of department faculty and staff, including 2 tenured faculty, 1 tenure-track faculty (who successfully received tenure), 1 full-time non-tenure-track faculty, several fluctuating part-time positions, 1 technician, and 1 part-time secretary.
- Responsible for overseeing all aspects of the department including: preparing budget requests and justifications for the department along with administering (and balancing) department and foundation accounts, strategic planning and program review (successfully conducted in 2010), conducting faculty and staff reviews, annual assessment reports, filling vacancies (secretary, technician, and part-time academic staff); development of dual-degree physics/engineering and physics/math education articulation agreements, fundraising and friend raising efforts (e.g., secured a $5k donation for the CWU physics department).
- Facilitated the development of PHYS 489 (Senior Assessment), in which physics majors created a portfolio with artifacts they believed best demonstrated their mastery of the department's program-level SLOs (artifacts, and student reflections for each artifact, were evaluated by the course instructor and reviewed with the department).

Committee Leadership

- Academic Department Chairs Organization (ADCO) Chairperson (2012–2013). Includes serving on the Budget and Finance Committee, Academic Affairs Committee, University Policy Advisory Committee, Commencement Committee, RCM working group. Led organization of Annual Chair Forum and workshop on evaluating faculty scholarship including digital scholarship. Also led the creation of a two-year calculus-ready tuition waiver for qualified students entering CWU (both first-year students and transfer students).
- ADCO Chairperson elect (2011–2012). Includes serving on the Academic Affairs Committee, assisted with organizing Annual Chair Forum and led organization of workshop on dealing with behavioral issues.

University of Wisconsin-La Crosse

- Interim Department Chairperson (2006–2007). Key accomplishments include:
  - Secured additional funding for replacement computers, replacement laboratory equipment, and a 0.5 FTEF increase for the Physics Department.
  - Prepared budget requests and justifications for the department along with administering (and balancing) budget accounts.

- Arranged for the distribution (and partial funding) of two first-year scholarships; an endowment was also received by the Department to fund undergraduate research (via a summer research award to a physics undergraduate)
- Supervision of Classified (Electronics Technician and Academic Department Associate) and Unclassified (three Tenured, three Tenure-Track and two Instructional Academic Staff) Staff.
- Physics Circus Organizing Committee (a physics show performed by the University of Minnesota for over 3000 participants; two shows in all).
- Other standard Department Chairperson activities: preparation of enrollment and degree data, course schedules, faculty peer merit reviews, annual academic goals for individual faculty, annual department report and numerous other information requests made by the administration, the state, and the general public. Along with attending numerous meetings, I led our department meetings, supervised the Student Evaluation of Instructors process, and the dual-degree program that resulted in approximately 17 transfers to our partner engineering institutions that year.

Committee Leadership

- Chairperson, Search and Screen for the Associate Dean (2006–2007).
- Chairperson, Physics Department Promotion, Retention and Tenure Committee (2006–2007) [review of 3 retentions and 2 promotions].
- Chairperson, Wisconsin Space Conference Planning Committee for the "14th Wisconsin Space Conference, Women in Space: Mars Exploration," conference held at the University of Wisconsin-La Crosse, August 19 and 20, 2004 (2003–2004).
- Chairperson and coordinator of the Wisconsin Association of Physics Teachers Conference held at the University of Wisconsin-La Crosse, Oct. 31–Nov. 1 (2003).
- Chairperson, Regents Teaching Award Committee (2003–2004).
- Chairperson, Physics Department Strategic Planning Committee (2001–2002, 2004–2005).

Leadership in Professional Organizations

- Elected councilor/divisional representative (starting in 2023), Physics and Astronomy Division, Council on Undergraduate Research (CUR) (2005–2008; 2008–2011; 2011–2014; 2014–2017, 2017–2020, 2020–2023, and 2023-2026).
- Chairperson, CUR Physics and Astronomy Division and member, CUR Executive Board (2013–2016).
- CUR Fellows Task Force (2005–2013); Chairperson (2006–2012); co-chairperson (2012–2013).
- CUR Posters on the Hill; co-chairperson (2012–2022).
- Grievance Chair, United Faculty of Central (2011–2013); Executive Board (2012–2013); Bargaining Team (2012–2013).
- Elected President, Washington Section of the American Association of Physics Teachers (2007–2008: President-elect, 2008–2009: President, 2009–2010: Past President/ President-elect, 2010–2011: President, 2011–2012: Past President).

Consultant, Facilitator, Presenter, or Invited Participant (professional development)

1. Workshop (online) co-facilitator: "Beginning a research program in an experimental science discipline at a Primarily Undergraduate Institution," Council on Undergraduate Research, June (2023).
2. Presentation/Workshop co-facilitator "Advocating for Undergraduate Research: What it is, Why it's important, and How to engage in it," ConnectUR Annual Conference, Council on Undergraduate Research, June (2023).
3. Physics Consultant, CUR Transformations project ("Integrating and Scaffolding Research into Undergraduate STEM Curricula: Probing Faculty, Student, Disciplinary, and Institutional Influences," NSF-IUSE program, Award #1625354), (2016–2021).
4. Invited Participant, *Levers for Change: An assessment of progress on changing STEM Instruction* (May 2018), American Association for the Advancement of Science with support from the National Science Foundation and Howard Hughes Medical Institute.
5. Presenter, workshop leader, and facilitator, APS/AAPT Department Chairs Conference, June (2021), (2020), and (2018).
6. Workshop Facilitator: Council of Undergraduate Research (CUR) Institute "Beginning a Research Program in the Natural Sciences at a Predominantly Undergraduate Institution," November (2018).
7. Invited Presentation and Workshop Facilitator, "The SPIN-UP Report and its Role in Developing a 'Rising' Thriving Physics Program," M. Jackson and the CWU physics department, Building a Thriving Undergraduate Physics Program, PhysTEC regional conference, February (2015).
8. Workshop Facilitator, "Becoming a more productive and effective teacher-scholar: Best practices for student mentoring," faculty workshop, College of New Jersey, October (2013) and Invited presentation, "Can undergraduates efficiently advance your research? It depends on your mentoring ... ."
9. Workshop Facilitator: "Exploration of electric circuits using hands-on activities and physics simulations," M. Jackson, Washington section of the American Association of Physics Teachers, October (2012).
10. Workshop Facilitator: "STEP Freshman Curriculum: Streamlining students into undergraduate research," M. Braunstein and M. Jackson,
    a. AAPT Day at the Regional conference, National Science Teachers Association, December (2011),
    b. Washington section of the AAPT meeting, October (2011),
    c. Council on Undergraduate Research, June (2010).
11. Workshop Facilitator: M. Jackson and T. Sorey, "Riding the Waves; Introducing the topics of interference and diffraction using laser light," LENS Institute hosted by ESD 105, Summer (2009).
12. Facilitator and Member, organizing committee, ADCO Chair Forum (2008 and 2009).

Effective Practices for Physics Programs (EP3) Project

The mission of the EP3 project is to create and maintain a set of resources that includes a guide of effective practices covering every aspect of operating a thriving undergraduate physics program. The resources are shaped by evidence-based research, community practice, and ongoing community evaluation and revision to ensure it will continue to be a primary reference for improving undergraduate programs. This guide also provides context for program reviews, emphasizing the importance for departments to engage in a cyclic process of self-reflection and

evaluation when making decisions or implementing strategies. The EP3 project will also connect with the community through a range of professional development opportunities: presentations, training, and workshops designed to engage participants on how to use the guide and implement its strategies. My roles on this project include:

- Past-Chairperson, EP3 Editorial Board, American Physical Society (2024);
- Chairperson, EP3 Editorial Board, American Physical Society (2023);
- Co-Chairperson, EP3 Task Force, American Physical Society (2016–2022);
- Co-Editor for the Guide: S. B. McKagan, D. A. Craig, M. Jackson, and T. Hodapp (editors), A Guide to Effective Practices for Physics Programs (EP3), American Physical Society: College Park, MD (2021). https://ep3guide.org/;
- Contributor (responsible for providing potential content to a section): High School Physics Teacher Preparation, How to Create and Use a Strategic Plan, How to Serve as an Undergraduate Program Reviewer, How to Undertake an Undergraduate Program Review, Undergraduate Research;
- Synthesis sub-committee member (responsible for synthesizing contributions and adding any missing material): Community Engagement and Outreach, Computational Skills, Degree Tracks, Dual-Degree Programs, High School Physics Teacher Preparation, How to Be an Effective Chair, How to Create and Use a Strategic Plan, How to Serve as an Undergraduate Program Reviewer, How to Undertake an Undergraduate Program Review, Introductory Courses for STEM majors, Online Education, Undergraduate Research, and
- Final review sub-committee member (responsible for the final review of content prior to dissemination): Advising and Mentoring of Students; Capstone Experiences; Computational Skills; Department Culture and Climate; Equity, Diversity, and Inclusion; How to Serve as an Undergraduate Program Reviewer; How to Undertake an Undergraduate Program Review; Instructional Laboratories and Experimental Skills; Internships; Preparing Students for Graduate School in Physics and Related Fields; The Physical Environment: Encouraging Collaboration and Learning; Retention of Undergraduate Physics Majors.

Guide sections are developed in a highly collaborative process involving numerous contributors, section developers, reviewers, and editors, any of whom may contribute to the final product. For each section, the EP3 team selects contributors and reviewers who are content experts and/or implementation experts in the content area of that section. Contributors, reviewers, synthesis committee members, and the editorial director all contribute significantly to the content and writing of the section. Each section undergoes several stages of external review prior to publication, involving multiple reviewers external to the EP3 Initiative, and so is in every meaningful sense a collaborative peer-reviewed publication. See ep3guide.org/about/contributors-and-reviewers for a list of contributors to EP3 Guide sections and a more detailed description of the process for developing a Guide section.

EP3 Workshops (select)

- AAS/APS Equity Educator Workshops (Facilitator role)
  - D. A. Craig, C. O'Donnell, M. Jackson, and Panelists: Ilse Cleeves, Catherine Deibel, Xavi Siemens, Michael Wittmann "How to create a supportive research environment for graduate students," November (2025).

    - D. A. Craig, C. O'Donnell, M. Jackson, L. McNeil, "How to design a curriculum for the modern world," April (2025).
    - D. A. Craig, M. Jackson, and Panelists: S. Jacobs, M. Marder, P. Nelson, D. Ucko, "How to facilitate a culture of ethical conduct," November (2024).
    - D. A. Craig, C. O'Donnell, M. Jackson, "How to be a (Future) Leader," April (2024).
- Co-facilitator (workshop), "Building Thriving Departments & Programs: Strategies to Promote Recruitment, Retention, and Career Preparation," 247th AAS Meeting (2026).

TEACHING

TEACHING ASSIGNMENTS

Central Washington University

- PHYS 111 and 112 – Introductory Physics and Introductory Physics II
- PHYS 181, 182, and 183 – General Physics I, II, and III (with laboratory)
- PHYS 320 and PHYS 321 – Electrical Circuits I and Laboratory (on-line)
  Taught in collaboration with Prof. Tim Hanshaw, Department of Electrical Engineering, Washington State University.
- PHYS 331 – Laboratory Practices and Techniques (i.e., electronics)
- PHYS 333 and 334 – Modern Physics Laboratory I and II
- PHYS 342 – Thermodynamics
- PHYS 363 – Optics (with laboratory)
- PHYS 463 – Fundamentals of Lasers (with MET 320/IET 530)
- PHYS 474 – Quantum Mechanics
- PHYS 495 – Undergraduate Research
- STEP 101 – Science Seminar I: Research Experience
- STEP 102 – Science Seminar II: Interdisciplinary Research Theme
  STEP 101 was an introduction to energy and its role in STEM disciplines while STEP 102 was a quarter-long group project.

University of Wisconsin-La Crosse

- PHY 103 and PHY 104 – Fundamental Physics I and II (with laboratory)
- PHY 106 – Physical Science for Elementary Educators
- PHY 203 and PHY 204 – General Physics I and II (with laboratory)
- PHY 302 and PHY 303 – Optics and Optics Laboratory
- PHY 311 – Experimental Physics
- PHY 321 – Classical Mechanics
- PHY 476 – Advanced Optics (with laboratory)
- PHY 497 – Physics and Astronomy Seminar
- PHY 498 – Undergraduate Research

State University of West Georgia

- PHYS 2211 and PHYS 2212 – Principles of Physics I and II (with laboratory)
- PHYS 3511 and PHYS 3512 – Experimental Physics I and II
- PHYS 4313 – Modern Physics
- PHYS 4984 – Physics Seminar
- XIDS 2001 – What Do You Really Know About The Physical Universe?

New Mexico State University (Lab Sections only)

- PHYS 110G – The Great Ideas of Physics
- PHYS 211L – General Physics I Laboratory
- PHYS 216L – Engineering Physics II Laboratory
- PHYS 281 – Experimental Thermal Physics, Light and Sound

Assessment of Teaching Example: In the mechanics portion of the introductory calculus-based physics class I used the Force Concept Inventory (FCI). When teaching the course in a more traditional format, that could only be supplemented sporadically with inquiry-based activities, the normalized gains on the FCI exams was approximately 0.44. When teaching in our SCALE-UP room on the CWU campus with fully integrated lecture/lab components, the normalized gains on the FCI exams was approximately 0.55. To provide some perspective, the fractional gain on the FCI for traditionally taught classes is about 0.25. For more interactive formats, the fractional gain varies from about 0.36 to 0.68 (Reference: Peer Instruction, E. Mazur, Page 46). Therefore, through incorporating more active learning techniques, in an integrated and intentional manner, the students' understanding of the material appeared to improve, which is consistent with formal PER studies.

Presentations (related to teaching, education, and undergraduate research)
(Over 20 presentations in all, external presentations since 2013 are listed)

1. Presentations related to the Effective Practices for Physics Programs (EP3) Project:
    a. M. Jackson (invited), "The Effective Practices for Physics Programs (EP3) Initiative," del XXXI Taller Internacional Nuevas Tendencias en la Enseñanza de la Física (2024);
    b. M. Jackson (invited), "Create an engaging learning environment using strategies from the EP3 Initiative," del XXXI Taller Internacional Nuevas Tendencias en la Enseñanza de la Física (2024).
    c. Presenter (invited), "The EP3 Initiative and its role in advancing department change efforts," March Meeting of the American Physical Society (2024);
    d. Co-presenter (invited), "Linking Institutional Priorities to Departmental-Based Action," C-80, Annual Conference of the Higher Learning Commission (2023);
    e. Presenter, "Tips and strategies on using the EP3 Guide for improving physics departments," Y28.001, March Meeting of the American Physical Society (2022);
    f. Co-presenter, "Improving your undergraduate major: Introduction to the Effective Practices for Physics Programs (EP3)," Abstract: R08.00001, April Meeting of the American Physical Society (2020);
    g. Co-presenter, "Thriving Physics Departments: Effective Practices, Tools, and Tips," Workshop 307, Sigma Pi Sigma Congress – PhysCon 2019, November (2019);
    h. Co-presenter (invited), "APS Guide to Effective Practices in Undergraduate Physics Programs: What it is and why you should care," April Meeting of the American Physical Society (2018),
2. Panelist, "Sharing and Reflecting on the Institutional Models that Support UR," CUR National Conference, June (2018).
3. Panelist, "Building Collaborative Relationships: Discussion of Vignettes Showcasing Innovative Relationships Designed to Support Student Learning," CUR National Conference, June (2018).
4. Panelist, PASSHE's Infinite Opportunities (Topic: Student Research), March (2017). Monthly discussion moderated by the Chancellor of PASSHE on various topics.
5. Invited Keynote Speaker, "How I tripped and stumbled through research: lessons and reflections," Stetson Showcase, Stetson University, April (2017).

6. Panelist: "A Distributed REU Site Focused on Serving Physics and Astronomy Students from Comprehensive and Community Colleges," CUR National Conference, June (2016).
7. Panelist, "Preparing undergrads for the PSM program," National Professional Science Master's Association's National Conference, November (2015).
8. Invited presentation, Marjorie Gardner Lecture "Strategies for Incorporating Research into the Undergraduate Curriculum," NSTA National Conference, March (2015).
9. Invited presentation, "Interactive Engagement in the Introductory Physics Sequence: Implementing Elements of the SPIN-UP Report," NSTA National Conference, April (2014).
10. Panelist, "LSC Guide Webinar IV: Exploring Teaching Labs." This was a webinar in the Learning Spaces Collaboratory (LSC) series on *The Ecosystem of Learning Spaces in the Undergraduate Setting*, May (2014).
11. Panelist for the *Exploring alternative structures for strengthening your introductory courses* webinar session and presenter of "Revising the introductory physics sequence at Central Washington University," *Teaching Introductory Geoscience Courses in the 21st Century* (virtual) conference, March (2014).
12. Keynote Speaker, "Teaching physics and its role in the survival (and growth) of a physics program," 2013 Summer Meeting of the AAPT.

ACCOMPLISHMENTS BY STUDENT ADVISEES

(Underlined names refer to undergraduates)

Awards and Fellowships

1. B. Freeman (Faculty Mentor: M. Jackson) received a SOURCE 2015 People's Choice: Best Poster Presentation Award for his presentation of "Measured Laser Frequencies from the Optically Pumped Methanol Isotopologue $^{13}CD_3OD$" at SOURCE 2015.
2. M. McKnight (Faculty Mentor: M. Jackson) received
    a. the College of the Sciences Best Oral Presentation Award for his presentation of "Far-Infrared Laser Emissions from Optically Pumped Methanol" at SOURCE 2014,
    b. the 2014 Center for Excellence in Leadership College of Sciences Dean's Award.
3. B. DeShano received the inaugural College of the Sciences Student of Distinction from Physics (2014).
4. A. Powell was the Undergraduate Scholar of the Year at SOURCE 2013. Dr. Michael Braunstein was lead mentor on this project and I served as co-mentor.
5. K. Olivier (Faculty Mentor: M. Jackson) was one of eleven recipients of the COTS BEST ORAL PRESENTATION AWARD for his SOURCE 2013 presentation. His presentation was "New Far-Infrared Laser Emissions from Optically Pumped Formic Acid and Several of Its Isotopic Forms." These awards recognize the top 10% of presentations in each category (in our case, within the College of the Sciences, COTS).
6. R. Corbin (Faculty Mentor: M. Jackson) placed third in the SOURCE 2013 Business Plan Competition.
7. R. Grist was selected for a NIST Summer Undergraduate Research Fellowship (SURF). He participated in this program at their Gaithersburg facility during the 2013 summer. As physics department chair, I assisted Richard in assembling his application package and managed the award.

8. T. Kilburn received the Barry M. Goldwater Scholarship, a program designed to foster and encourage excellence in science and mathematics (2012–2013). As physics department chair, I helped Troy assemble his application package. To my knowledge this was the first Barry Goldwater scholarship applied for and received by a CWU student.
9. J. Milne (Faculty Mentor: M. Jackson) was one of five recipients of the COTS BEST ORAL PRESENTATION AWARD for his SOURCE 2011 presentation. Jason was also one of two students selected as an Honorable Mention for the 2010–2011 Undergraduate Scholar of the Year.
10. T. Petersen received
    a. the "Dean's Award" from the Center for Excellence in Leadership, Central Washington University (2009).
    b. an "Outstanding Presentation" award at SOURCE 2009 for the oral presentation "Frequencies and Wavelengths From a New Far-Infrared Lasing Gas: $^{13}CHD_2OH$."
11. W. Sizemore (Faculty Mentor: M. Jackson) received an "Outstanding Presentation" award at SOURCE 2009 for the poster presentation "Using the Force Concept Inventory to Improve Student Understanding of Frictional Forces."
12. G. Borstad (Faculty Mentor: M. Jackson) received the
    a. Murphy Award recognizing the top two graduating seniors at the University of Wisconsin-La Crosse (2008).
    b. Barry M. Goldwater Scholarship, a program designed to foster and encourage excellence in science and mathematics (2007–2008).
13. B. Chuzles (Faculty Mentor: M. Jackson)
    a. received the Murphy Award recognizing the top graduating senior at the University of Wisconsin-La Crosse (2005).
    b. was selected for the Fellows Program offered by the U.S. Department of Homeland Security (2005–2007).
    c. was selected for the Scholars Program offered by the U.S. Department of Homeland Security (2003–2005). She was one of 50 students selected for this program and the only student majoring in physics.
14. J. Sullivan (Faculty Mentor: M. Jackson) was recognized for his research accomplishments at UW-L by being featured in an article entitled "Optics Course Changed Sigma Xi Grant Recipient's Path", *American Scientist*, **90**, #6, 584 (2002).

Supervision of Undergraduate Thesis

- K. Olivier, "Discovery of far-infrared laser emissions from optically pumped HCOOH, $H^{13}COOH$, HCOOD, DCOOH, and DCOOD," CWU Science Honors thesis (2013).
- T. Petersen, "Frequencies and wavelengths from a new far-infrared lasing gas: $^{13}CHD_2OH$," CWU Science Honors thesis (2009).

Student Research Presentations to Members of the United States Congress

1. A. Nichols and D. Womack (Faculty advisors: T. Fleming, L. R. Zink and M. Jackson), "The first laser action observed from optically pumped O-17 methanol," 16th Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research (2012).

2. J. Milne (Faculty advisors: L. R. Zink and M. Jackson), "The first 9 THz laser emission generated by optically pumped O-18 methanol," 15th Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research (2011).
3. B. Chuzles (Faculty advisors: L. R. Zink and M. Jackson), "High Resolution Spectroscopic Studies in the Infrared and Far-Infrared Regions," 9th Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research (2005).
4. D. Sutton (Faculty advisors: C. Hill, J. M. Brown, and M. Jackson), "Investigation of Carbon-Based Free Radicals in the Infrared," 7th Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research (2003).
5. H. Hockel and M. Lauters (Faculty advisors: M. D. Allen, K. M. Evenson, and M. Jackson), "Discovery and Investigation of Optically Pumped Laser Emissions from Methanol Isotopes in the Far-Infrared," 5th Annual Undergraduate Research Posters on the Hill, Council on Undergraduate Research (2001).
6. N. G. Roland (Faculty advisors: M. Jackson and G. R. Sudhakaran), "Far-Infrared Laser Stark Spectroscopy of CD_3OH," 4th Annual Undergraduate Research Posters on the Hill, Council of Undergraduate Research (2000).

Student Research Presentation to members of the Wisconsin State Assembly

- "Laser Research at UW-La Crosse," M. Jackson with students N. Fuchs, N. Leisso, D. Pulvermacher, Q. Sanford and J. Sullivan. Laser research was presented to members of the Wisconsin State Legislature and was one of two exhibits representing UW-La Crosse at UW-Day, March (2001).

Invited Student Research Presentations

1. B. Chuzles (Faculty advisor: M. Jackson), "My Undergraduate Research Experience and Presentation at ICPS 2005," 132nd National Meeting, American Association of Physics Teachers, January (2006)
2. B. Chuzles (Faculty advisor: M. Jackson), "The Discovery and Measurement of Optically Pumped Molecular Laser Emissions and Their Use in the Investigation of Unstable Molecular Species," Brooke was one of three students selected to represent the Society of Physics Students and present the research she performed at UW-L at the International Conference of Physics Students. The conference was from August 11 – 18, 2005 in Coimbra, Portugal. The Society of Physics Students covered Brooke's expenses for the conference.
3. B. Chuzles (Faculty advisors: G. R. Sudhakaran and M. Jackson), "High Resolution Spectroscopy in the Infrared and Far-Infrared Regions," Undergraduate Session – DAMOP 2004, Annual Meeting of the Division of Atomic, Molecular and Optical Physics, Paper G1.001, American Physical Society, May (2004).
4. J. L. Olson (Faculty advisors: G. R. Sudhakaran and M. Jackson), "Far-Infrared Laser Stark Spectroscopy of 1,1 Difluoroethylene," 2001 Division of Atomic, Molecular and Optical Physics Annual Meeting, American Physical Society, Paper K3.2, May (2001).

Student Research Presentations (Regional or National Conferences only)

Twenty presentations, several of which are given below. Numerous internal presentations have been given by students at department seminars and university sponsored celebrations of undergraduate research and creative activities.

1. J. M. Barajas, C. Gerke, and M. Jackson, "Measurement of far-infrared laser frequencies from optically pumped O-18 methanol," NCUR 2015, March (2015).
2. A. Willcutt, M. Murphy, L. R. Zink and M. Jackson, "Discovery and Frequency Measurement of Optically Pumped Laser Emissions in the Far-Infrared," 17th Wisconsin Space Conference, August (2007).
3. B. Chuzles, C. DiRocco, P. Noffke, L. R. Zink and M. Jackson, "Investigation into Using Hydrazine (N_2H_4) as a Source of Short-wavelength FIR Laser Emissions," Annual Meeting of the Optical Society of America, Frontiers in Optics, October (2004).
4. J. J. Sullivan, N. P. Leisso, G. R. Sudhakaran and M. Jackson, "Construction of a Far-Infrared Laser Cavity for use with an Optically Pumped Molecular Laser System," NCUR 2002, April (2002).
5. N. Fuchs, M. Jackson, and G. R. Sudhakaran, "Far-Infrared Laser Stark Spectroscopy," 15th National Conference on Undergraduate Research, March (2001).
6. H. J. Hockel, M. Jackson, and G. R. Sudhakaran, "Stark Spectroscopy Using Direct Discharge and Optically Pumped Lasers in the Far-Infrared," NCUR 2000, National Conference on Undergraduate Research (NCUR), April (2000).
7. J. Olson, G. R. Sudhakaran, and M. Jackson, "Far-Infrared Laser Stark Spectroscopy of 1,1 Difluoroethylene," NCUR 2000, April (2000).

Student Advisee Research Grants Funded (External)

1. A. Willcutt, "Discovery and Frequency Measurement of Far-Infrared Laser Emissions From Optically Pumped $^{13}CHD_2OH$," Wisconsin Space Grant Consortium, funded for $1,500 (2007).
2. G. Borstad, "Investigation of the hydroxyl radical using laser magnetic resonance spectroscopy," Wisconsin Space Grant Consortium, funded for $3,000 (2006).
3. "Measurement and Application of Far-Infrared Laser Emissions," submitted by the UW-L SPS chapter to the Sigma Pi Sigma Undergraduate Research Awards, funded for $1,864 (2005).
4. T. Garrod, "Frequency Measurements of Optically Pumped Laser Emissions in the Far-Infrared," Wisconsin Space Grant Consortium, funded for $3,000 (2005).
5. M. Theisen, "Frequency Measurements of Far-Infrared Laser Emissions," Wisconsin Space Grant Consortium, funded for $3,250 (2004).
6. C. DiRocco, "High Resolution Spectroscopy of Carbon-Based Free Radicals in the Infrared," Wisconsin Space Grant Consortium, funded for $3,000 (2003).
7. P. Noffke, "Discovery of Laser Emissions From Methanol Isotopes," Wisconsin Space Grant Consortium, funded for $3,000 (2003).
8. D. Sutton, "High Resolution Spectroscopy of Free Radicals in the Far-Infrared," Wisconsin Space Grant Consortium, funded for $3,000 (2002).
9. J. Sullivan, "High Resolution Spectroscopy of Partially Deuterated Methanol Isotopes," funded for $663, Sigma Xi - Grants-In-Aid of Research Award (2001).
10. N. A. Fuchs, "The Search for New Optically Pumped Laser Emissions in the Far-Infrared Region," Wisconsin Space Grant Consortium, funded for $2,850 (2001).

11. J. Sullivan, "Construction of an OPML System," Wisconsin Space Grant Consortium, funded for $3,000 (2001).
12. M. Lauters, "The Search for New Short Wavelength Laser Emissions from Optically Pumped Methanol Isotopes," funded for $911, Sigma Xi - Grants-In-Aid of Research Award (2000).
13. H. Hockel, "The Search for New Short Wavelength Laser Lines from Optically Pumped CH_3OH and CD_3OH," Wisconsin Space Grant Consortium, Undergraduate Research Award, funded for $3,000 (2000).
14. N. Roland, "Far-Infrared Laser Stark Spectroscopy of CD_3OH," funded for $1,000, Sigma Xi - Grants-In-Aid of Research Award (2000).
15. 14 students received 18 internal research grants from CWU and UW-L totaling over $45,000.

SCHOLARSHIP

PUBLICATIONS

Manuscripts in Refereed Journals (underlined names refer to undergraduate co-authors; graduate students are underlined and in italics)

1. D. Craig, T. Hodapp, M. Jackson, "Helping physics departments thrive," *Physics Today*, **78** (2), 46–52, February (2025). https://doi.org/10.1063/pt.qmze.bxpx
2. M. Jackson, "New far-infrared laser frequencies generated by CH_3CN, CD_3CN, $^{13}CH_3I$, CD_3I, and $^{13}CD_3I$," Journal of Infrared, Millimeter and Terahertz Waves, **44**, 3-4, 313-319 (2023). https://doi.org/10.1007/s10762-023-00910-9.
3. H. Ganser, C. Hill, *J. H. George*, J. M. Brown, and M. Jackson, "Re-investigation of the infrared spectrum of the NCN radical by laser magnetic resonance spectroscopy," *Journal of Molecular Spectroscopy*, **382**, November–December (2021), Article No. 111547. https://doi.org/10.1016/j.jms.2021.111547. Jon George was a graduate student at the University of Oxford.
4. M. Jackson, C. Gerke, J. Barajas, R. M. Lees, "Measurement and Spectroscopic Assignment of Far-Infrared Laser Frequencies Generated by $^{13}CD_3OH$ and $CH_3{}^{18}OH$," *IEEE Journal of Quantum Electronics*, **54**, No. 1, Feb. (2018). INSPEC Accession Number: 17466262. https://doi.org/10.1109/JQE.2017.2786861. Jose Barajas was an undergraduate at Yakima Valley Community College and an NSF-REU participant.
5. M. Jackson, B. Freeman, M. Smith, and M. Kemper, "Frequency measurement of far-infrared laser emissions from C-13 methanol isotopologues," *IEEE Journal of Quantum Electronics*, **52** (11), Article No. 1400104, 4 pages, November (2016). https://doi.org/10.1109/JQE.2016.2612878. Michael Kemper was an undergraduate at Yakima Valley Community College.
6. M. Jackson and L. R. Zink, "Characterizing far-infrared laser emissions and the measurement of their frequencies," *Journal of Visualized Experiments*, Issue 106, e53399 (2015). https://dx.doi.org/10.3791/53399.
7. R. M. Lees, M. Jackson, G. Moruzzi, A. Predoi-Cross, and B. E. Billinghurst, "Assignment of Far-Infrared Laser Lines of O-17 Methanol by Synchrotron FTIR Spectroscopy and Laser Frequency Measurements," *Journal of Molecular Spectroscopy*, **315**, 80-82 September (2015). https://doi.org/10.1016/j.jms.2015.03.001.
8. M. Jackson, M. Smith, C. Gerke, and J. M. Barajas, "Measurement of far-infrared laser frequencies from methanol isotopologues," *IEEE Journal of Quantum Electronics*, **51** (4), Article No. 1500105, 5 pages, April (2015). https://doi.org/10.1109/JQE.2015.2398352. Jose Barajas was an undergraduate at Yakima Valley Community College and an NSF-REU participant.
9. B. DeShano, K. Olivier, B. Cain, L. R. Zink, and M. Jackson, "Using guide wavelengths to assess far-infrared laser emissions," *Journal of Infrared, Millimeter, and Terahertz Waves*, **36**, 13-30 (2015). https://doi.org/10.1007/s10762-014-0104-x. Breeanna Cain was an undergraduate from Edmonds Community College.
10. E. C. C. Vasconcellos, K. M. Evenson, H. Hockel, M. Lauters, L. R. Zink, and M. Jackson, "Measurement of laser frequencies from CD_3OH and CD_3OD up to 8.6 THz," *Journal of Infrared, Millimeter, and Terahertz Waves*, **35**, 881-890 (2014).

https://doi.org/10.1007/s10762-014-0108-6. This manuscript reports the first measurement of laser frequencies for CD_3OH above 8 THz.

11. P. Penoyar, E. Johnson, M. McKnight, and M. Jackson, "New optically pumped far-infrared laser emissions from $^{13}CD_3OH$, $^{13}CD_3OD$, CD_3CN, and $^{13}CD_3I$," *IEEE Journal of Quantum Electronics*, **50**, 429-433 (2014). https://doi.org/10.1109/JQE.2014.2314284.
12. K. Olivier, B. DeShano, B. Cain, L. R. Zink, and M. Jackson, "Discovery of optically pumped far-infrared laser emissions from formic acid and its isotopologues," *Journal of Infrared, Millimeter, and Terahertz Waves*, **35**, 419-424 (2014). https://doi.org/10.1007/s10762-014-0055-2. Breeanna Cain was an undergraduate from Edmonds Community College.
13. M. Jackson, H. Alves, R. Holman, R. Minton, and L. R. Zink, "New cw optically pumped far-infrared laser emissions generated with a transverse or 'zig-zag' pumping geometry," *Journal of Infrared, Millimeter, and Terahertz Waves*, **35**, 282-287 (2014). https://doi.org/10.1007/s10762-013-0031-2. This manuscript reports the construction of a new type of cavity used to generate far-infrared laser emissions.
14. M. McKnight, P. Penoyar, M. Pruett, N. Palmquist, S. Ifland, and M. Jackson, "New far-infrared laser emissions from optically pumped CH_2DOH, CHD_2OH, and $CH_3{}^{18}OH$," *IEEE Journal of Quantum Electronics*, **50**, 42-46 (2014). https://doi.org/10.1109/JQE.2013.2291993. This manuscript reports the discovery of new laser emissions and their support for the proposed spectroscopic assignments of three laser schemes. S. Ifland was an undergraduate from Edmonds Community College and N. Palmquist was a rising sophomore at Johns Hopkins University.
15. S. Ifland, M. McKnight, P. Penoyar, and M. Jackson, "New far-infrared laser emissions from optically pumped $^{13}CHD_2OH$," *IEEE Journal of Quantum Electronics*, **50**, 23-24 (2014). https://doi.org/10.1109/JQE.2013.2288079. This manuscript reports the first laser emissions with wavelengths above 100 μm from optically pumped $^{13}CHD_2OH$. S. Ifland was an undergraduate from Edmonds Community College.
16. M. Jackson, A. J. Nichols, D. R. Womack, and L. R. Zink, "First laser action observed from optically pumped $CH_3{}^{17}OH$," *IEEE Journal of Quantum Electronics*, **48**, 303-306 (2012). https://doi.org/10.1109/JQE.2011.2181338. A. Nichols and D. Womack were undergraduates from Edmonds Community College. This manuscript reports the first laser emissions generated by $CH_3{}^{17}OH$.
17. M. Jackson, J. A. Milne, and L. R. Zink, "Measurement of optically pumped $CH_3{}^{18}OH$ laser frequencies between 3 and 9 THz," *IEEE Journal of Quantum Electronics*, **47**, 386-389 (2011). https://doi.org/10.1109/JQE.2010.2090513. This manuscript reports the first 9 THz laser frequency measured for $CH_3{}^{18}OH$.
18. M. Jackson, T. Petersen, and L. R. Zink, "Frequencies and wavelengths from a new far-infrared lasing gas: $^{13}CHD_2OH$," *IEEE Journal of Quantum Electronics*, **45**, 830-832 (2009). https://doi.org/10.1109/JQE.2009.2013974. This manuscript reports the first laser emissions generated by $^{13}CHD_2OH$.
19. M. Jackson, L. R. Zink, J. P. Towle, *N. Riley*, and J. M. Brown, "The rotational spectrum of the FeD radical in its $X^4\Delta$ state, measured by far-infrared laser magnetic resonance," *Journal of Chemical Physics*, **130**, Issue 15, 154311-1 to 154311-13 (2009). https://doi.org/10.1063/1.3117182. Neil Riley was a graduate student from the University of Oxford.

20. L. R. Zink, A. Willcutt, M. Murphy, and M. Jackson, "Frequencies of cw FIR laser lines for use in laser magnetic resonance spectroscopy," *Applied Physics B*, **92**, 5-7 (2008). https://doi.org/10.1007/s00340-008-3078-3.
21. M. Jackson, L. R. Zink, M. C. McCarthy, *L. Perez*, and J. M. Brown, "The far-infrared and microwave spectra of the CH radical in the v = 1 level of the $X^2\Pi$ state," *Journal of Molecular Spectroscopy*, **247**, 128-139 (2008). https://doi.org/10.1016/j.jms.2007.11.001. A spectrum from this article was selected to appear on the cover of the Journal. Luis Perez was a graduate student from the University of Oxford.
22. *C. Uranga*, G. M. Borstad, C. Connell, L. R. Zink and M. Jackson, "Discovery and Frequency Measurement of Short-Wavelength Far-Infrared Laser Emissions From Optically Pumped $^{13}CD_3OH$ and CHD_2OH," *Applied Physics B*, **88**, 503-505 (2007). https://doi.org/10.1007/s00340-007-2764-x. Chris Uranga was a graduate student from San Diego State University.
23. *A. Robinson*, J. M. Brown, J. Flores-Mijangos, L. R. Zink and M. Jackson, "A spectroscopic study of the ^{14}NH radical in vibrationally excited levels of the $X\,^3\Sigma^-$ state by far-infrared laser magnetic resonance," *Molecular Physics*, **105**, 639-662 (2007). https://doi.org/10.1080/00268970601162085. Andrew Robinson was a graduate student from the University of Oxford.
24. M. Jackson, L. R. Zink, J. Flores-Mijangos, *A. Robinson* and J. M. Brown, "Discovery and characterization of optically pumped far-infrared laser emissions using laser magnetic resonance spectroscopy," *Applied Physics B*, **86**, 303-307 (2007). https://doi.org/10.1007/s00340-006-2419-3. Andrew Robinson was a graduate student from the University of Oxford.
25. M. Jackson, T. J. Garrod, M. Ramberg and A. Stokes, "Discovery and frequency measurement of far-infrared laser emissions generated by optically pumped CH_2DOH," *Applied Physics B*, **81**, 1067-1069 (2005). https://doi.org/10.1007/s00340-005-2037-5.
26. M. Jackson, L. R. Zink, T. J. Garrod, S. Petersen, A. Stokes and M. Theisen, "The generation and frequency measurement of short-wavelength far-infrared laser emissions," *IEEE Journal of Quantum Electronics*, **41**, 1528-1532 (2005). https://doi.org/10.1109/JQE.2005.858788. This manuscript reports the improvements made to the three-laser heterodyne system that permits the measurement of short-wavelength FIR laser frequencies.
27. M. Jackson, B. Chuzles, C. DiRocco, P. Noffke and L. R. Zink, "Measurement of far-infrared laser frequencies generated by optically pumped N_2H_4 and N_2D_4," *Applied Physics B*, **80**, 945-946 (2005). https://doi.org/10.1007/s00340-005-1874-6. This manuscript reports the first measurement of a FIR laser frequency from N_2D_4.
28. T. J. Garrod, S. Petersen, A. Stokes, M. Theisen, L. R. Zink and M. Jackson, "Frequency measurements of optically pumped laser emissions from the CHD_2OH methanol isotope," *IEEE Journal of Quantum Electronics*, **41**, 224-226 (2005). https://doi.org/10.1109/JQE.2004.839683.
29. M. Jackson, H. Hockel, M. Lauters, M. D. Allen and K. M. Evenson, "Frequency measurements of optically pumped laser emissions from the CHD_2OH methanol isotope," *International Journal of Infrared and Millimeter Waves*, **25**, 1711-1717 (2004). https://doi.org/10.1007/s10762-004-0192-0. This manuscript reports the first measurement of FIR laser frequencies from the CHD_2OH methanol isotope ever performed.

30. S. R. Raju, L. H. Johnston, G. R. Sudhakaran, J. L. Olson, M. Jackson and R. W. Davis, "Far-infrared laser Stark spectroscopy of 1,1 difluoroethylene," *International Journal of Infrared and Millimeter Waves*, **25**, 1037-1051 (2004). https://doi.org/10.1023/B:IJIM.0000037652.33503.6d.
31. M. Jackson, P. Noffke and L. R. Zink, "Frequency measurement of FIR laser emissions from optically pumped CH_3OD," *Applied Physics B*, **78**, 273-274 (2004). https://doi.org/10.1007/s00340-004-1413-x.
32. E. C. C. Vasconcellos, M. Jackson, M. Lauters, H. Hockel, M. D. Allen and K. M. Evenson, "Frequency measurements and discovery of far-infrared laser emissions from optically pumped $^{13}CD_3OH$," *Applied Physics B*, **77**, 561-562 (2003). https://doi.org/10.1007/s00340-003-1345-x.
33. E. C. C. Vasconcellos, C. DiRocco, B. Chuzles, J. Knier, J. Schwalbe, D. Sutton and M. Jackson, "Reinvestigation of far-infrared laser emissions from hydrazine and deuterated isotopes of difluoromethane and methanol," *Applied Physics B*, **77**, 97-99 (2003). https://doi.org/10.1007/s00340-003-1244-1.
34. K. M. Evenson, Q. Sanford, C. Smith, D. Sutton, J. Sullivan, E. Vershure and M. Jackson, "New short-wavelength laser emissions from partially deuterated methanol isotopes," *Applied Physics B*, **74**, 613-614 (2002). https://doi.org/10.1007/s003400200864. This manuscript reports the discovery of the shortest known FIR laser emission from optically pumped CHD_2OH.
35. M. Jackson, H. Hockel, M. Lauters, E. C. C. Vasconcellos, M. D. Allen and K. M. Evenson, "New short-wavelength laser emissions from optically pumped $^{13}CD_3OD$," *IEEE Journal of Quantum Electronics*, **38**, 429-431 (2002). https://doi.org/10.1109/3.998613.
36. M. Jackson, D. Bauen and J. E. Hasbun, "Investigation of Laser Fundamentals Using a Helium-Neon Laser," *European Journal of Physics*, **22**, 211-218 (2001). https://iopscience.iop.org/article/10.1088/0143-0807/22/3/303.
37. H. Hockel, M. Lauters, M. Jackson, J. C. S. Moraes, M. D. Allen, and K. M. Evenson, "Frequency measurements and spectroscopic assignments of optically pumped $^{13}CH_3OH$," *Applied Physics B,* **73**, 257-260 (2001). https://doi.org/10.1007/s003400100643.
38. M. Jackson, E. M. Telles, M. D. Allen, and K. M. Evenson, "Short-wavelength far-infrared laser cavity yielding new laser emissions in CD_3OH," *Applied Physics B*, **72**, 815-818 (2001). https://doi.org/10.1007/s003400100523. This manuscript reports the details of the newly designed and constructed short-wavelength OPML system.
39. M. Jackson, G. R. Sudhakaran, A. Silveira Jr., I. Mukhopadhyay, and R. M. Lees, "Far-infrared laser Stark spectroscopy of CH_3OD," *International Journal of Infrared and Millimeter Waves*, **20**, 584-594 (1999). https://doi.org/10.1023/A:1022684304588.
40. M. Jackson, G. R. Sudhakaran, and E. Gansen, "Far-infrared laser Stark spectroscopy of PH_3," *Journal of Molecular Spectroscopy*, **181**, 446-451 (1997). https://doi.org/10.1006/jmsp.1996.7188.
41. M. Jackson, G. R. Sudhakaran, and E. Gansen, "Far-infrared laser Stark spectroscopy of $^{13}CD_3OD$," *Journal of Molecular Spectroscopy*, **176**, 439-441 (1996). https://doi.org/10.1006/jmsp.1996.0105.
42. G. R. Sudhakaran and M. Jackson, "FIR laser Stark spectroscopy of CD_3F in the $\nu_6 = 1$ vibrational state," *Journal of Molecular Spectroscopy*, **175**, 445-447 (1996). https://doi.org/10.1006/jmsp.1996.0051.

43. G. R. Sudhakaran, B. J. Soller, M. Jackson, I. Mukhopadhyay, and R. M. Lees, "Far-infrared laser Stark spectroscopy of CH_3OH and $^{13}CH_3OH$," *International Journal of Infrared and Millimeter Waves*, **16**, 2111-2131 (1995). https://doi.org/10.1007/BF02073414.
44. G. R. Sudhakaran, E. K. Coulson, and M. Jackson, "Laser Stark spectroscopy of $^{13}CH_3F$," *International Journal of Infrared and Millimeter Waves*, **16**, 1329-1333 (1995). https://doi.org/10.1007/BF02069546.
45. M. Jackson, G. R. Sudhakaran, A. Silveira Jr., R. M. Lees, and I. Mukhopadhyay, "FIR laser Stark spectroscopy of $CH_3{}^{18}OH$," *Journal of Molecular Spectroscopy*, **164**, 275-286 (1994). https://doi.org/10.1006/jmsp.1994.1072. This was my undergraduate research thesis.
46. G. R. Sudhakaran, M. Jackson, R. M. Lees, Li-Hong Xu, and I. Mukhopadhyay, "Stark spectroscopy of $^{13}CD_3OH$ with the HCN laser," *Infrared Physics*, **34**, 661-665 (1993). https://doi.org/10.1016/0020-0891(93)90126-R.

Book Chapters

- "Chapter 4: Transformation through a Disciplinary Lens" M. Vandermaas-Peeler, S. K. Byrd, C. G. Reiness, K. A. Frederick, B. E. Holmes, S. C. Bates, B. A. Cunningham, M. Jackson, K. Quenemoen, and C. A. Wooley (2024). In Transforming Academic Culture and Curriculum: Integrating and Scaffolding Research Throughout Undergraduate Education, Mitchell R. Malachowski, Elizabeth L. Ambos, Kerry K. Karukstis, Jillian L. Kinzie, and Jeffrey M. Osborn (Eds.).
- M. Jackson and J. F. Mateja (2023). Chapter 14: A Distributed Summer Research Program in Physics and Astronomy. In *Expanding Undergraduate Research in Mathematics: Making UR More Inclusive*, M. Dorff, J. Rychtar, and Dr. Taylor (Eds.), The Mathematical Association of America, Volume 94, pp. 143-151, ISBN 978-1-61444-330-8. This is an expanded version of: M. Jackson and J. F. Mateja, "A distributed REU site focused on serving physics and astronomy students from comprehensive and community colleges," *CURQ on the Web*, **36**, No. 4, 17-19 (2016).
- N. Abraham, J. Hudgings, M. Jackson, and W. Rogers (2022). Undergraduate Research in Physics. In *The Cambridge Handbook of Undergraduate Research*, H. Mieg, E. Ambos, A. Brew, D. Galli, & J. Lehmann (Eds.), Cambridge Handbooks in Education, pp. 191-198 (Cambridge: Cambridge University Press). DOI: 10.1017/9781108869508.026.
- B. C. Palmquist and M. Jackson (2015). Strengthening physics teacher preparation programs using key findings from the SPIN-UP report. In "*Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices*," C. Sandifer and E. Brewe (Eds.), Physics Teacher Education Coalition. ISBN: 978-0-9848110-5-2.

Manuscripts under preparation and ongoing work (underlined names refer to undergraduate co-authors; graduate students are underlined and in italics)

- Several other ongoing projects include the dissemination of measured far-infrared laser frequencies from optically pumped formic acid and its isotopologues, & 1, 1 difluoroethylene (the latter with Y. Meeker, CWU) as well as the analysis of the LMR spectra for ND (with J. Groves, CWU), ^{15}ND (with *A. Robinson*, University of Oxford), ^{15}NH (with A. T. Le, UW-L), and CH_3O (with K. Leonavicius, University of Oxford).

FELLOWSHIPS AND GRANTS

Educational Grants and Contracts Funded

1. "Changing the Culture: Developing a Guide of Effective Practices to Improve, Assess, and Review Undergraduate Physics Programs," T. Hodapp, R. Hilborn, M. Jackson, D. Craig, and C. Turpen, Award Amount: $2,299,673, Award #1821372, Grant Duration: 10/01/2018 – 9/31/2023, NSF–Improving Undergraduate STEM Education [IUSE] Program, Division of Education.
2. "Workshop II: Creating a guide for programmatic assessment, review, and improvement in undergraduate physics programs," T. Hodapp, M. Jackson, and D. Craig, Award Amount: $45,259, Award #1747563, Grant Duration: 09/01/2017 – 08/31/2018, NSF–IUSE Program, Division of Education.
3. "Workshop: Creating a Guide for Programmatic Assessment, Review, and Improvement in Undergraduate Physics Programs," T. Hodapp, M. Jackson, D. Craig, and S. McKagan, Award Amount: $47,620, Award #1738311, Grant Duration: 05/01/2017 – 04/30/2018, NSF–Integrative Activities in Physics Program, Division of Physics.
4. "Enhancing NASA related research and educational activities at Central Washington University," M. Jackson, Washington Space Grant Consortium, funded for $80,000 (with a $90,000 in-kind match) (2008–2015) [contract 1 for $30,000: 3/1/2008 – 2/28/2011; contract 2 for $50,000: 5/17/2010 – 5/16/2015].
5. "Web-based Learning and High-Performance Computing in a Physics Curriculum," SUN Microsystems, AEG and SEIP Programs, funded for $19,235 (1999).
6. 7 internal grants from CWU and UW-L were received totaling approximately $32,000 with over $28,000 in equipment received through Melles Griot's Optical Component Donation Program (1999).

Research Grants Funded

1. "REU SITE: A Pilot Distributed REU Site Focused on Serving Physics and Astronomy Students from Comprehensive and Community Colleges," M. Jackson and J. F. Mateja, Award Amount $155,040, Award #1358879, Grant Duration: 04/01/14 – 03/31/16, NSF-Research Experiences for Undergraduates [REU] Program, Division of Physics.
2. "RUI: High Resolution Spectroscopy of Stable Molecular Species and Free Radicals," M. Jackson and L. R. Zink, Award Amount $180,426, Award #0910935, Grant Duration: 07/01/09 – 08/31/13, NSF-RUI Program, Experimental Physical Chemistry: Gas Phase Program.
3. "RUI: High Resolution Spectroscopy of Stable Molecular Species and Free Radicals," M. Jackson and L. R. Zink, Award Amount $180,000, Award #0604715, Grant Duration: 07/01/06 – 05/31/09, NSF-RUI Program, Experimental Physical Chemistry: Gas Phase Program. This grant was later transferred to Central Washington University under #0802607.
4. "Investigation of the NH and ND radicals using laser magnetic resonance spectroscopy," L. R. Zink and M. Jackson, Award Amount $5,000 (with an additional $5,000 match), Grant Duration: 07/01/06 – 06/30/07, Wisconsin Space Grant Consortium/NASA.
5. "High Resolution Molecular Spectroscopy Using Direct Discharge and Optically Pumped Lasers in the Far-Infrared," M. Jackson and G. R. Sudhakaran, Award Amount $120,000,

Award #0406556, Grant Duration: 07/01/04 – 08/31/06, NSF-Two Year Extension for Special Creativity.

6. "Measurement of Far-Infrared Laser Emissions and Their Use in Investigating Atmospheric and Interstellar Molecules," M. Jackson and G. R. Sudhakaran, Award Amount $10,000 (with an additional $10,000 matching), Grant Duration: 07/01/03 – 06/30/05, Wisconsin Space Grant Consortium/NASA.
7. "High Resolution Molecular Spectroscopy in the Far-Infrared Using Laser Magnetic Resonance," M. Jackson, ACS-PRF #37769-GB, Award Amount $35,000, Grant Duration: 09/01/02 – 08/31/04, American Chemical Society – Petroleum Research Fund.
8. "High Resolution Spectroscopy of Free Radicals in the Far-Infrared," M. Jackson, Award Amount $36,800, Grant Duration: 09/01/02 – 08/31/04, Research Corporation.
9. "High Resolution Spectroscopy of Free Radicals in the Far-Infrared," M. Jackson, 2002 Award Amount $3,000, Grant Duration: 06/01/02 – 05/31/03, Council of Undergraduate Research – Undergraduate Summer Research Fellowship in Science. Only one proposal was funded in the Physics and Astronomy Division.
10. "U.S.-U.K. Cooperative Research: High Resolution Spectroscopy of Free Radicals Using Laser Magnetic Resonance," M. Jackson, Award Amount $17,400, Award #0200746, Grant Duration: 06/01/02 – 05/31/05, NSF-International Education Program.
11. "Acquisition of a Three-Laser Heterodyne Frequency Measurement System," M. Jackson and G. R. Sudhakaran, Award Amount $96,999, Award #0114450, Grant Duration: 08/01/01 – 09/01/04, NSF-Major Research Instrumentation [MRI] Program.
12. "High Resolution Molecular Spectroscopy Using Direct Discharge and Optically Pumped Lasers in the Far-Infrared," M. Jackson and G. R. Sudhakaran, Award Amount $120,500, Award #0078812, Grant Duration: 07/01/00 – 08/31/03, NSF-RUI Program.
13. "Purchase of an Optically Pumped Molecular Laser System," G. R. Sudhakaran and M. Jackson, Award Amount $69,950, Award #9982001, Grant Duration: 02/01/00 – 02/01/03, NSF-Chemical Research Instrumentation and Facilities Program for use by Junior Faculty [CRIF] Program.
14. "New Short Wavelength Emissions from the Optically Pumped Interstellar Molecules CH_3OH and CD_3OH," M. Jackson, Award Amount $2,500 (with an additional $2,500 matching), Grant Duration: 02/01/00 – 02/01/03, Wisconsin Space Grant Consortium/NASA – Research Infrastructure Program.
15. "The Search for New Short Wavelength Emissions from an Optically Pumped Molecular Laser in the Far-Infrared," B. de Mayo and M. Jackson, Award Amount $35,000 [my portion was for $10,000], Grant Duration: 06/01/99 – 05/31/00, Georgia Space Grant Consortium/NASA.
16. 5 internal grants from UW-L were also received totaling approximately $28,000. In addition, I was awarded a sabbatical for the 2005–2006 academic year at UW-L.

Service Grants Funded (underlined names refer to student co-authors)

1. Eight small grants funded for over $15,000 (with an additional $6,000 matching funding provided) from several organizations including the Optical Society of America, Society of Physics Students (Marsh W. White Award), Wisconsin Space Grant Consortium, CWU Foundation, and UW-La Crosse.

OTHER PROFESSIONAL ACTIVITIES RELATED TO SCHOLARSHIP

Publications in Proceedings and Magazines

1. M. Jackson, "My First Research Experience: The most transformative element of my undergraduate education," *SPS Observer*, **49**, 10-11, Spring (2015).
2. M. Jackson and L. Schactler, "Summer Research Slots Hit at Central Washington University," Vignette in *How the Flawed Federal Budgeting Process Damages the National Undergraduate Research Agenda*, *CUR Quarterly*, Volume 34, No. 2, p. 18, Winter (2013). Excerpts also appeared in "Faces of Austerity: How Budget Cuts Have Made Us Sicker, Poorer, and Less Secure," NDD United report, November (2013).
3. M. Jackson and L. R. Zink, "Recent Measurements of optically pumped far-infrared laser frequencies performed with an improved three-laser heterodyne system," International Conference on Perspectives in Vibrational Spectroscopy (2006).
4. B. Chuzles, C. DiRocco, M. Jackson, H. Ganser and J. M. Brown, "Reinvestigation of the NCN Radical Using the Laser Magnetic Resonance Technique," *Proceedings of the 13th Annual Wisconsin Space Conference*.
5. M. Jackson, D. Sutton, G. R. Sudhakaran and K. M. Evenson, "New Optically Pumped Laser Emissions From a Short-Wavelength Far-Infrared Laser Cavity," *IEEE Conference Digest*, Twenty Seventh International Conference on Infrared and Millimeter Waves, 63-64 (2002).
6. G. R. Sudhakaran, J. T. Dobler, and M. Jackson, "Far-Infrared Laser Stark Spectroscopy," *Space Outlook*, Wisconsin Space Grant Consortium, **7**, 23-24 (1998).
7. G. R. Sudhakaran, B. J. Soller, M. Jackson, and I. Mukhopadhyay, "Far-Infrared Laser Stark Spectroscopy of CH_3OH and $^{13}CH_3OH$," *Proceedings of the International Conference on Spectroscopy: Perspectives and Frontiers* (1996).
8. G. R. Sudhakaran and M. Jackson, "Far-Infrared Laser Stark Spectroscopy of Methanol and its Isotopic Species," *Space Outlook*, Wisconsin Space Grant Consortium, **5**, 18-19 (1995).
9. Eleven other proceedings manuscripts were also published that eventually became peer-reviewed manuscripts.

Research Presentations (Regional and National Conferences)

Twenty presentations, several of which are given below.

1. M. Jackson, L. R. Zink, J. Flores-Mijangos, *A. Robinson* and J. M. Brown, "Far-Infrared Laser Magnetic Resonance Spectroscopy of Vibrationally Excited NH," 61st International Symposium on Molecular Spectroscopy, Paper MJ03, June (2006).
2. G. R. Sudhakaran and M. Jackson, "High-resolution spectroscopy in the far-infrared region using direct discharge and optically pumped molecular lasers," International Conference on Spectrophysics (INCONS 2005), February (2005). **Invited Paper**.
3. M. Jackson and L. R. Zink, "Development of spectroscopic systems for the investigation of stable and unstable molecular species in the far-infrared," International Conference on Spectrophysics (INCONS 2005), February (2005). **Invited Paper**.
4. M. Jackson, D. Sutton, G. R. Sudhakaran and K. M. Evenson, "New Optically Pumped Laser Emissions From a Short-Wavelength Far-Infrared Laser Cavity," IEEE Conference Digest, Twenty Seventh International Conference on Infrared and Millimeter Waves, September (2002).
5. M. Jackson, H. J. Hockel, M. E. Lauters, J. Sullivan, G. R. Sudhakaran, M. D. Allen, K. M. Evenson, Li-Hong Xu, R. M. Lees, and I. Mukhopadhyay, "Frequency Measurements

of Optically Pumped Laser Emissions and Stark Spectroscopy of CD_3OD and CHD_2OH," 2001 Division of Atomic, Molecular and Optical Physics Annual Meeting, American Physical Society, Paper C3.001, May (2001).

6. M. Jackson, G. R. Sudhakaran, A. Silveira Jr., I. Mukhopadhyay, and R. M. Lees, "Far-Infrared Laser Stark Spectroscopy Using the Water Vapor Laser," Centennial Meeting of the American Physical Society, Paper WB14, March (1999).
7. M. Jackson, B. J. Soller, G. R. Sudhakaran, R. M. Lees, and I. Mukhopadhyay, "Far-Infrared Laser Stark Spectroscopy of $^{13}CH_3OH$," 50th International Symposium on Molecular Spectroscopy, Paper FB03, June (1995).
8. M. Jackson, G. R. Sudhakaran, R. M. Lees, A. Silveira, Jr., and I. Mukhopadhyay, "FIR Laser Stark Spectroscopy of $CH_3{}^{18}OH$," 47th International Symposium on Molecular Spectroscopy, Paper FA04, June (1992).

Co-supervision of experimental work in Graduate Student Research (thesis)

1. L. Perez, "An investigation of vibrationally excited CH by far-infrared laser magnetic resonance," Physical and Theoretical Chemistry Laboratory, University of Oxford (2007), Institutional Advisor: Dr. J. M. Brown.
2. C. Uranga, "Discovery and measurement of far-infrared laser emissions from optically pumped CHD_2OH and $^{13}CD_3OH$," Department of Chemistry, San Diego State University (2007), Institutional Advisor: Dr. A. Cooksy.
3. A. Robinson, "An investigation of the NH radical by far-infrared laser magnetic resonance," Physical and Theoretical Chemistry Laboratory, University of Oxford (2006), Institutional Advisor: Dr. J. M. Brown.

Graduate Thesis Committees

- *S. Yadav*, "Hidden structures in sound for signal detection," PhD (2026), (Academic Advisor: 2022–2025; Dr. Scott Teare served as her research advisor).
- *S. Chrisman*, "A sensory neuron mediates electroreception in *Caenorhabditis Elegans*," Biology MS thesis (2014). I also assisted Steve and his advisor, Dr. Lucinda Carnell, with their research (that spanned Steve's education as an undergraduate and graduate student).
- *A. Morken*, (project) "Outreach to science technology engineering and math students through hosting K-12 educational robotic competitions: An event planning guide and data collection project," IET MS degree (2013) [graduate school representative].
- *C. Liao*, "An Energy Efficiency Comparison of a Solar Tracking PV System to a Stationary PV System," IET MS degree (2010) [graduate school representative].
- *G. Anderson*, "The effect of wood core construction on the performance of alpine skis," IET MS degree (2010) [graduate school representative].

UNIVERSITY AND PROFESSIONAL SERVICE

New Mexico Institute of Mining and Technology

- Campus Representative, Barry Goldwater Scholarship & Excellence in Education Foundation program (2021–Present). Two NMT students have been selected as a Scholar.
- Member of Committees (select examples): Council of University Presidents (2025–Present), Executive and Extended Cabinet (2024–Present), Strategic Plan Task Force (2022-2025, Executive Board member; co-Chairperson, Ensuring Student Success working group, 2022-2025; co-Chairperson, Enriching Engaged Learning working group, 2022-2023), Behavioral Intervention Team (2021–2024), COVID Task Force (2021–2022), Distance Education Advisory Board (2021–2025), Student Data Quality Committee (2021–Present), Faculty Development Committee (2021–2023, ex-officio).
- Peer Reviewer for the Higher Learning Commission (2022–Present). Completed training in 2022 and served as a member of a Year 4 Review Team in 2023 and a Site Visit Review Team in 2024.
- Judge, Student Research Symposium and Graduate Student Poster Session (2022–2025).

Millersville University

- Campus Representative, Barry Goldwater Scholarship & Excellence in Education Foundation program (2015–2021). One Millersville University student was selected as a Scholar while four students were selected as an Honorable Mention.
- Coordinator, PASSHE STEM conference, held annually in fall semester (2016–2018).
- Facilitator, University-wide Scholarship and Research Applications from SCTE.
    - In the past five years, two Millersville University students were selected to receive the Pennsylvania State System of Higher Education Syed R. Ali-Zaidi Award for Academic Excellence (awarded to one student in all of PASSHE).
    - Nominated students for presenting their research at the *Undergraduate Research at the Capitol Pennsylvania* program held at the State Capitol in Harrisburg, PA.
- Institutional Representative, Millersville University's IACUC (2015–2021).
- Member, Administrative Caucus, Meet and Discuss, (2019–2021; partially in 2017 and 2018 due to schedule conflicts). Includes membership on the MU-APSCUF Summer Pay Task Force to develop a Voluntary Alternate Summer Compensation Model local agreement (for low-enrolled 2020 summer courses).
- Member, Appeals Committee, Pennsylvania Central Region Science Olympiad, held annually in the Spring semester (2016–2019).
- Member, Budget Committee (University and 5-year) (2018–2021).
- Member, Campus Facilities Master Plan Steering Committee (2019).
- Member, Innovation Task Force and Incident Response Team (2020). COVID-19 specific committees focused on developing plans for reopening campus, safety, and ensuring consistent communication across campus during the pandemic.
- Member, IT Advisory Council (2015–2018).
- Member, Made in Millersville Organizing Committee (2015–2017).
- Member, Middle States Working Group Standard 4 (Support of the Student Experience) (2018–2020).

- Member, Smart Scheduling Agility Team (2015–2016); Communications Agility Team (2016).
- Member, Strategic Advisory Council (2015–2021).
- Member, Student Success and Retention Committee (2018–2019).
- Service for PASSHE
    - Reviewer, new program proposals (review of new programs developed by other PASSHE Institutions; includes a review of the curriculum and financial feasibility) (2018, 2019).
    - Department Chairs and Assistant Chairs Workload Joint Labor-Management Committee (regarding Side Letter for Article 6, Department Chairpersons) (2018).

Central Washington University

- Member, Provost Search and Screen Committee (2010).
- Member, Search and Screen for COTS Dean (2008; 2008–2009).
- Member, COTS Personnel Committee (2008–2011); alternate (2012–2013).
- Member, Library ad-hoc Post-Tenure Review Committee (2011–2012).
- Member, Task Force on the Future of STEM Education Efforts in COTS (2012–2013).
- Member, COTS Merit Review Committee (2009).
- Member, Search and Screen for COTS Development Officer (Summer 2008).
- FIRST regional advisory committee (2012–2013). Includes creation of a FIRST robotics tuition waiver for qualified students entering CWU (students who are nominated by their coaches and have competed in a FIRST robotics tournament on our campus).
- Member, Appeals Board Committee (2009).
- Member, Science Honors Advisory Committee (2008–2011, 2012–2013).
- Member, Science Honors Application Review Committee (2009, 2010, and 2011).
- Undergraduate Research Fellowship Application Review Committee (2009–2013).
- Moderator, New Faculty Orientation: "Getting to Tenure/Professional Records" (2009–2012).
- Member, Department Personnel Committees: Chemistry (2008) and Geology (2007).
- Faculty Senate (Physics department alternate 2010–2011, representative 2011–2013).
- Judge, SOURCE 2008, SOURCE 2009, SOURCE 2010, SOURCE 2011.
- Physics and Engineering Advisor (2007–2013; 2014–2015). Included all degree programs. Led revision of dual-degree physics/engineering program with Washington State University, the development of an articulation agreement in 2007–2008, and other institutions. Also assisted with the development of the dual-degree physics/math education program with the CWU Department of Mathematics and the development of an articulation agreement (Bruce Palmquist served as lead and the program was facilitated by a PhysTEC grant our department received).

University of Wisconsin-La Crosse

- Physics and Engineering Advisor (1999–2007). Included all degree programs except Astronomy. Includes curricular development of a Physics Major with Biomedical Concentration and the Dual-Degree Physics/Physical Therapy Program (an undergraduate

physics and graduate PT program). I also served on the Pre-Medical Advisory Committee and Physics and Non-Science Majors Pre-Medical Advisor (2000–2003).

- Faculty Senate (Elected for an At-Large Position) (2006–2007).
- Member, SAH College Committee (Elected; 2003–2005, 2006–2007).
- Member, UW-L Academic Planning Committee (2006–2007).
- College of Science and Allied Health Faculty Sabbatical Review Committee (2003–2004 and 2006–2007).
- Member, Physics Department Recruitment Committee (Campus Close-up Presentations and Tours) (2003–2005, 2006–2007); e.g. During the 2006–2007 academic year, I provided 21 tours, sent 47 follow-up letters to perspective students and contacted perspective students by phone.
- Student Club Advisor: Optical Society of America (2003–2007), Physics Club/Society of Physics Students (2002–2005), Sigma Pi Sigma Advisor (2002–2005), and Eta Phi Alpha Faculty Advisor (Honor Society for students on the Colleges of Liberal Studies and Science and Allied Health) (1999–2005).
- Member, Physics Department Promotion, Retention and Tenure Committee (2004–2005) [2 retentions].
- Member, Physics Search and Screen Committee (1999–2005) [four tenure-track faculty positions, two full-time academic staff and one electronics technician position].
- Member, Distinguished Lecture Series in Physics Committee (2000–2005, 2006–2007).
- Member, Other Physics Department Committees: Sigma Pi Sigma Selection Committee (2000–2005, 2006–2007); Biomedical Emphasis Committee (1999–2000, 2003–2004); Physics Department Scholarship Committee (2000–2003, 2006–2007); Retirement Committee (2003); Organized FIR laser laboratory open house for 2004 Council on Undergraduate Research National Conference (2004).
- Scholarship Committees: UW-L Scholarship and Awards Committee (2002–2005; Chair: 2004–2005); Eta Phi Alpha Scholarship Selection Committee (Chair; 2000–2006); Scott Carnes Memorial Scholarship Fund Committee (2005–2006).
- Member, Organizing Committee for Indian Cuisine Fundraising Dinner, UW-L Freshman Scholarship program in Physics (Gross $4,330; Net $2,616) (2004).
- Undergraduate Research Committees: Undergraduate Research Committee: Travel and Supplies Grants (2003–2005); UW-L Undergraduate Research Committee (2001–2002); College Graduate Student Awards Committee (2000); SAH Travel and Supplies Grants Ad-Hoc Committee (1999–2003); UW-L Undergraduate Research Day Ad-Hoc Committee (1997).
- Member, College of Science and Allied Health Reassigned Time Committee (2002–03).
- Member and Chairperson of the College of Science and Allied Health Safety Ad-Hoc Sub-Committee (1999–2003).
- Member, UW-L Faculty Development Committee (2001–2002).
- Presenter, "Snapshots of Faculty Work," UW-L New Faculty and Academic Staff Orientation (2000).

State University of West Georgia

- Physics and Engineering Advisor (1998–1999). Includes curriculum development for: Physics Majors with: a Business Concentration, an Education Concentration, an Emphasis in Computation, an Emphasis in Electro-Optics, and an Emphasis in Solid State.
- Member, Teacher Education Advisory Committee (1999).
- Member, Criteria for Promotion and Tenure and Merit Pay (TEAC subcommittee, 1999).
- Member, Collaborative Schools Committee (1999).

Service Presentations

- Panelist, "Conversation with the CUR Student Programs Task Force: State Capitol Days National Survey and Best Practices for State Capitol Days," CUR National Conference, June (2018).
- "Posters on the Hill," The CUR Posters on the Hill Committee (L. Wimmers and M. Jackson, Co-Chairs), CUR National Conference, June (2018), (2016), and (2014).
- "The CUR Fellows," The CUR Fellows Task Force (M. Jackson, Chair), CUR National Conference, June (2012) and (2010).
- "The Physics and Laser Light Outreach Program at UW-La Crosse," M. Jackson, R. Klindworth and G. R. Sudhakaran, 126th AAPT National Meeting, American Association of Physics Teachers, CC03, January (2003).
- "Lasers: The Solution in Search of a Problem," presented at the 13th Annual History Fair – "Turning Points in History," hosted by the Department of History, UW-L, March (2000).

Science Outreach to the Community
(Central Washington University and University of Wisconsin-La Crosse)

Physics and Laser Shows

This hour and a half science program includes exciting and interesting demonstrations chosen from different branches of physics (mechanics, sound, pressure, light, electricity and magnetism) with a 12-minute laser light extravaganza finale choreographed to music. The setup and dismantling time for this show is about 16 hours (total) and was performed mostly for elementary and middle school children. Includes completing FDA reports.

- 1995 – 2012: Over 170 shows for over 13,000 elementary and middle school students, teachers, and participants from the general public.
- I initiated and organized the "Science is Central" series 2010. This week-long event occurred prior to the start of the fall classes at CWU. Free programs were offered to area elementary and middle schools during the day with evening programs for the public. In 2013 (my sabbatical year), the program was institutionalized by the Center for Excellence in Science and Mathematics Education.

Other outreach programs include

- FIRST robotics referee: FTC League (December 2012); FIRST Lego League (FLL) Qualifier and Eastern Washington Championship (January and February, 2013); FIRST Robotics Challenge Central Washington Regional (March 2013). Serving as a referee required passing the respective referee exams!
- Kaleidoscopes: (2004 – 2015): almost 80 shows conducted for about 2400 Elementary School students and teachers (typically 3rd grade).

- Mechanics, Circuits, Electricity & Magnetism, or Sound: (2002–2013): over twenty shows for over 800 participants.
- "Water rockets," CAMP Academic Academy (May, 2013); "Water rockets and solar observing," Yakama Nation (September, 2012; Washington Space Grant Consortium).
- "Lasers," 3rd grade class from Saddle Mountain Intermediate School (2011).
- Astronomy Outreach; one show for over 70 Girl Scouts (Cadets, Juniors and Brownies) seeking different merit badges, May (2008).
- "Rockets" (arranged through the UW-L Office of Multicultural Student Services), 50 students and tutors; "Fun with Optics," Girls in Science, 16 middle school students (2007).
- "Simple Machines" and "Wind Energy," over 40 students and teachers (2004–2005).
- Offered two workshops for 61 Girl Scouts working on "Science in Action" Merit Badge, October 2003 and May 2004. 21 parents and troop leaders were also in attendance.

Committees for Professional Societies

- Member, Advocacy Committee, CUR (2022-2023). Includes development of a workshop, attendance at committee meetings, and attendance at the Spring poster event (April 26, 2023).
- Member, Steering Committee, APS/AAPT Department Chairs Conference, June (2021, 2020, and 2018).
- Member, Committee on Education, American Physical Society (2016–2018).
- Member, Steering Committee, 2016 Symposium for NSF-REU site directors (2015–16).
- Elected, College Representative to Workshops Committee, Wisconsin Association of Physics Teachers (2002–2005).
- President of local (UW-La Crosse) Sigma Xi chapter (2002–2005).

Service as a Referee

- Program Reviewer: Served as an external review for physics departments in the following years: 2012, 2013, 2016, 2017, 2022 (2), 2024 (1).
- Physics and Astronomy SEA Change Reviewer (2023). Includes receiving reviewer training and evaluation of applications.
- Scholarship and Grant Reviewer: Barry Goldwater Scholarship & Excellence in Education Foundation program (2017–Present); National Science Foundation includes individual proposals and panels from CCLI, MRI, RUI, CAREER, and CRIF:ID Chemistry Programs (2004–2013); Wisconsin Space Grant Consortium: Higher Education Program, Research Infrastructure Program and Undergraduate Research Award Program, Faculty Seed Grant Program (2002, 2004, 2005); QNRF National Priorities Research Program (2007).
- Textbook Reviewer: "Classical Mechanics with MATLAB Applications," J. E. Hasbun (2006–2007 and 2007–2008); Chapters 1 – 9 of Introductory Classical Mechanics with MATLAB Applications, Jones and Bartlett Publishers (2006); Chapters 19 and 20 from "College Physics," Giambattista et al. (2002); Unit Q from "The Six Ideas That Shaped Physics," Thomas Moore (2002).
- Manuscript and Book Chapter Reviewer: *Future of Undergraduate Research in Mathematical Sciences* (2020), *Cambridge Handbook of Undergraduate Research* (2019), *American Journal of Physics* (2019); *Canadian Journal of Physics* (2019); *Journal of Infrared, Millimeter, and Terahertz Waves* (2018, 2017, 2 – 2016, 2015, and 2014);

Infrared Physics and Technology (2016); *Optics Communications* (2016); *Optics Letters* (2015); *IEEE Journal of Quantum Electronics* (2002, 2004, 2005 and 2006); *Journal of Physics B: Atomic, Molecular and Optical Physics* (2006); *Journal of Physics D: Applied Physics* (2009), *Infrared Physics and Technology* (2003).

- External reviewer for the Ph.D. dissertation: "Investigation on Physico-Mechanical and Dielectric Properties of Some Vulcanized, Reinforced and Blended Rubber Materials", Post Graduate and Research Department of Physics, Presidency College, (University of Madras), India (2008); "Spectrophysical, Chemical and Ultrasonic Investigation on Some Materials of Technological Importance," Post Graduate and Research Department of Physics, Presidency College, (University of Madras), India (2007–2008); "Spectroscopic and Dielectric Studies of Some Carbonyl and Hydroxyl Systems," Department of Physics, Annamalai University, Tamilnadu, India (2006–2007).
- Selected to participate in the US Navy's *Educators To Sea (ETS)* program aboard the USS Ronald Reagan, March (2014).

Professional Affiliations

- American Association of Physics Teachers
- American Physical Society
- Council on Undergraduate Research
- Optica (Optical Society of America)
- Sigma Xi

- Sigma Pi Sigma (Physics Honor Society)