

## MICHAEL C. HOLCOMB

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Angelo State University  
Physics and Geosciences  
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### EDUCATION

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May 2019	Ph.D. in Physics – Texas Tech University	Lubbock, Texas
Dec 2013	M.S. in Physics – Texas Tech University	Lubbock, Texas
May 2012	B.A. Double Major: Mathematics, Physics – Austin College	Sherman, Texas

### SPECIALIZATION

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Theoretical and Computational Soft Condensed Matter (Biophysics)

### TEACHING EXPERIENCE

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2019 – Current	Assistant Professor of Physics – Angelo State University	San Angelo, Texas
	<ul style="list-style-type: none"><li>▪ Lecture Sections: Applied Optics, Astronomy of the Solar System, Digital Electronics, Fundamentals of Astronomy, General Physics, Physical Sciences</li><li>▪ Lab Sections: Applied Optics, Digital Electronics, Fundamentals of Physics, Physical Sciences, Solar System Astronomy</li></ul>	
2019	Instructor – Texas Tech University	Lubbock, Texas
	<ul style="list-style-type: none"><li>▪ Traditional Lecture Sections: Principles of Physics</li></ul>	
2014 – 2019	Graduate Part-Time Instructor – Texas Tech University	Lubbock, Texas
	<ul style="list-style-type: none"><li>▪ Traditional Lecture Sections: Principles of Physics, General Physics</li><li>▪ Inquiry-Based Sections: General Physics</li><li>▪ Freshman Seminar</li><li>▪ Undergraduate Research</li></ul>	
2012 – 2017	Graduate Teaching Assistant – Texas Tech University	Lubbock, Texas
	<ul style="list-style-type: none"><li>▪ Traditional Laboratory Sections: Principles of Physics, Optics, Solar System Astronomy, Stellar Astronomy</li><li>▪ Traditional Recitation Sections: Principles of Physics</li><li>▪ Inquiry-Based Sections: General Physics</li></ul>	
2010 – 2013	Owner/Tutor – ELE Tutoring	Sherman, TX; Lubbock, Texas
	Tutor primary, secondary, and higher education students in mathematics, physics, clarinet performance, and other subjects.	

**CURRICULUM DEVELOPMENT**

2020	Assistant Professor – Angelo State University Work collaboratively with other lecturers to develop, revise, and facilitate the transition of existing algebra-based physics experiments from traditional in-person delivery to completely online delivery.	San Angelo, Texas
2017	Graduate Part-Time Instructor – Texas Tech University Update, revise, and expand existing algebra-based physics manuals used in the inquiry-based lecture sections. Work collaboratively with other lecturers and PER faculty to develop training techniques for both graduate and undergraduate teaching assistants.	Lubbock, Texas
2013	TEACH Program Fellow – Texas Tech University The Teaching Effectiveness And Career enHancement (TEACH) Program is a competitive year-long fellowship through the Teaching, Learning, & Professional Development Center. The program assists fellows in developing teaching skills through one-on-one meetings with pedagogical development consultants, instructor videotaping, comprehensive class feedback, peer observations, project work, and workshop attendance.	Lubbock, Texas

**RESEARCH MENTORING EXPERIENCE**

2020 – 2021	Molecular Dynamics of Alpha Synuclein – Angelo State University	San Angelo, Texas
2020 – 2021	Silk Ballooning in <i>Erigone</i> Spiders – Angelo State University	San Angelo, Texas
2020	Intercellular Mechanics of Biofilms – Angelo State University	San Angelo, Texas
2018 – 2019	Ventral Furrow Formation in <i>Drasophila</i> – Texas Tech University	Lubbock, Texas

**PROFESSIONAL SERVICE**

2020 – Current	Women in Physics (WIP) Advisor – Angelo State University Serve as the faculty advisor for WIP by providing guidance and support to members and officers. Assisted in the establishment of the first WIP group at ASU which also has the distinction of being the third WIP group in the State of Texas.	San Angelo, Texas
2020 – Current	Society of Physics Students (SPS) Co-Advisor – Angelo State University Serve as a faculty co-advisor for SPS by working in collaboration with the official faculty advisor to provide guidance and support to members and officers.	San Angelo, Texas
2019	HHMI IE3 Leadership Grant Committee Member – Angelo State University Serve with other faculty members to create a proposal for the Howard Hughes Medical Institute Inclusive Excellence grant to support meaningful change in diversity and inclusion.	San Angelo, Texas
2017	RaiderReady Mentor – Texas Tech University Serve as a faculty mentor for first-generation and high-risk first-semester students.	Lubbock, Texas
2016 – 2019	Sigma Pi Sigma Chapter President – Texas Tech University Coordinate volunteer efforts for outreach events, such as the South Plains Regional Science and Engineering Fair. Work with departmental advisors to review undergraduate and graduate students for induction eligibility. Plan and coordinate annual induction ceremony. Developed, planned, and supervised TTU Department of Physics and Astronomy's First and Second Annual Student Poster Competition.	Lubbock, Texas

2016	Grade Appeal Committee Member – Texas Tech University Serve with other faculty members to review, investigate, and suggest response to student-initiated grade appeals filed with the Dean of the College of Arts and Sciences.	Lubbock, Texas
2014 – 2018	Discussion Coordinator and TA Trainer – Texas Tech University Traditional Laboratory and Discussion Sections: Meet with graduate teaching assistants (TAs) once a week to prepare them for the upcoming week. Develop mini-lectures, assignments, and exercises (to be implemented by graduate TAs) for discussion sections that cover material relevant across multiple lecture sections.  Inquiry-Based Sections: Meet with graduate and undergraduate TAs once a week to prepare them for the upcoming week. Work with them to reinforce content knowledge and develop their pedagogical content knowledge.	Lubbock, Texas

### **VOLUNTEER SERVICE**

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2020	TRIYS Research Project Mentor Answer questions for young students working to complete self-selected and -motivated research projects.	San Angelo, Texas
2019	Science Night Volunteer – Whiteside Elementary School Coordinated the volunteer efforts from Sigma Pi Sigma and volunteered time to perform demonstrations for their Science Night.	Lubbock, Texas
2018 – 2019	Judge – Legacy Elementary School Science Fair Coordinated the volunteer efforts from Sigma Pi Sigma and judged 4th and 5th grade science fair projects.	Lubbock, Texas
2018 – 2019	Judge – Roscoe Wilson Elementary School Science Fair Coordinated the volunteer efforts from Sigma Pi Sigma. Judged 3rd and 2nd grade science fair projects and judged as a tie-breaker for 4th grade projects.	Lubbock, Texas
2018	Judge – 17th Annual Graduate Research Poster Competition Judged graduate student posters in the category of Visual and Performing Arts.	Lubbock, Texas
2017 – 2019	Judge, Setup Volunteer – South Plains Regional Science & Engineering Fair Coordinated the volunteer efforts from Sigma Pi Sigma, volunteered time to help set up the science fair, and judged elementary and 5th grade science fair projects.	Lubbock, Texas

### **PUBLICATIONS**

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**M.C. Holcomb**, G.-J.J. Gao, M. Servati, D. Schneider, P.K. McNeely, J.H. Thomas, and J. Blawdziewicz. Mechanical Feedback and Robustness of Apical Constrictions in *Drosophila* Embryo Ventral Furrow Formation. *Status: Preparing Corrections Jan. 2021*, doi: <https://doi.org/10.1101/743609>

G.-J.J. Gao, F.-L. Yang, **M.C. Holcomb**, J. Blawdziewicz. Enhanced flow rate by the convergence of Tetris particles when discharged from a hopper with an obstacle. *Status: Submitted with Corrections Jan. 2021*, arXiv: <https://arxiv.org/abs/2003.01898>

**M.C. Holcomb.** Coordination of Ventral Furrow Formation During *Drosophila* Gastrulation Through Mechanical Stress Feedback. Ph.D., Texas Tech University, 2019

G.-J.J. Gao, J. Blawdziewicz, **M.C. Holcomb**, and S. Ogata. Understanding the Local Flow Rate Peak of a Hopper Discharging Discs through an Obstacle Using a Tetris-like Model. *Granular Matter*, 21(25), 2019

G.-J.J. Gao, **M.C. Holcomb**, J.H. Thomas, and J. Blawdziewicz. Embryo as an active granular fluid: stress-coordinated cellular constriction chains. *J. Phys. Condens. Matter*, 28(41), 2016

### INVITED PRESENTATIONS

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“Mechanical feedback during ventral furrow formation in *Drosophila*: exploring intercellular coordination and robustness.” Angelo State University Biology Department Bio-Lunch, San Angelo, Texas, January 24, 2020

“Exploring cellular harmonization via mechanical feedback mechanisms.” Angelo State University Society of Physics Students Seminar, San Angelo, Texas, October 21, 2019

“Cellular harmonization during embryonic development: how do cells coordinate mechanical activity?” Trinity University Physics Department Seminar, San Antonio, Texas, November 28, 2017

### CONFERENCE PRESENTATIONS

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**M.C. Holcomb**, G.-J.J. Gao, M. Servati, D. Schneider, P.K. McNeely, J.H. Thomas, and J. Blawdziewicz. Cellular Constriction Chains in the *Drosophila* Embryo: Mechanical Feedback and Robustness of Morphogenetic Movements. Abstract no. F01.00006. Joint Fall 2019 Meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the Society of Physics Students, Lubbock, Texas, October 25-26, 2019

**M.C. Holcomb**, G.-J.J. Gao, M. Servati, J.H. Thomas, and J. Blawdziewicz. Mechanical Feedback during Ventral Furrow Formation in *Drosophila*: Intercellular Coordination and Robustness. Control ID 2883723. APS March Meeting 2018, Los Angeles, California, March 5-9, 2018

**M.C. Holcomb**, G.-J.J. Gao, J.H. Thomas, and J. Blawdziewicz. Mechanical Feedback in the *Drosophila melanogaster* Embryo: Robustness and Intercellular Coordination. Abstract no. K4.00004. Joint Fall 2017 Meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the Society of Physics Students, Richardson, Texas, October 20-21, 2017

**M.C. Holcomb**, G.-J.J. Gao, J.H. Thomas, and J. Blawdziewicz. Embryo as an active granular fluid: stress-coordinated cellular constriction chains. Abstract no. D30.00002. 69th Annual Meeting of the APS Division of Fluid Dynamics, Portland, Oregon, November 20-22, 2016

**M.C. Holcomb**, G.-J.J. Gao, J.H. Thomas, and J. Blawdziewicz. *Drosophila melanogaster* Embryo as an Active Granular Fluid: Intercellular Coordination via Mechanical Feedback during Morphogenesis. Abstract no. 230ao. AIChE Annual Meeting, San Francisco, California, November 13-18, 2016

### OTHER ACADEMIC ACHIEVEMENTS, HONORS, AWARDS, AND ACTIVITIES

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- 2019 Session Chair for Biological and Soft Matter Physics, APS 2019 Joint Fall Meeting
- 2018 Doctoral Dissertation Completion Fellowship, Texas Tech University (TTU) Graduate School
- 2016 American Physical Society Division of Fluid Dynamics Travel Grant
- 2013 TEACH Program Fellow, TTU Teaching, Learning, and Professional Development Center
- 2012 Sigma Pi Sigma, Physics National Honor Society

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**ADDITIONAL SKILLS & EXPERIENCE**

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**Academic & Teaching**

Academic event planning  
Instructor of record for 24-60 student sections (inquiry-based)  
Instructor of record for 20-200 student sections (traditional)  
Instructor of record for 13-76 student sections (online)  
Lab TA for 6-60 student sections  
Mentoring first-year graduate students and junior lab colleagues  
One-on-one and small group tutoring  
Proposal writing for federal (NSF, NIH) and private (KECK Foundation) funding sources  
Research advisor for non-STEM undergraduate students  
Undergraduate student mentoring

**Programming & Computers**

Bash shell scripts  
Fortran90 based computer programming  
Gnuplot scripts  
Image editing and figure generation software: GIMP, Inkscape, and Fresh Paint  
Java based computer programming  
Learning management system: Blackboard and TopHat  
Learning support software: Gradescope and TopHat  
NI LabVIEW programming  
Office productivity software: Microsoft Office, OpenOffice  
Operating systems: Microsoft Windows, Scientific Linux, Debian  
Video recording and editing software: Camtasia, Kaltura, and OpenShot  
Video streaming software: Collaborate Ultra and Zoom

**Equipment**

National Instruments interface, and related data acquisition equipment  
Pasco introductory physics lab equipment  
Power, air, and hand tool proficiency  
Thor Labs optical tables, lenses, filters, sources, and related interfacing equipment  
Vernier LabPro and LabQuest interfaces, Logger Pro, and related data acquisition equipment

**Medical**

Medical terminology proficiency  
Medical Response Emergency System (MRES) Computer Aided Dispatch (CAD)  
Previous completion of GEMS, PEPP, and AHA healthcare provider (CPR and AED) education  
Previous completion of EMT-Basic education including Weapons of Mass Destruction response safety  
Sterile technique and body substance isolation precautions