

## 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. Physics	Texas Tech University
Dec 2013	M.S. Physics	Texas Tech University
May 2012	B.A. Double Major: Mathematics, Physics	Austin College

### SPECIALIZATION

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Computational Biophysics and Granular Materials

### TEACHING EXPERIENCE

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2019 – Current	Assistant Professor of Physics	Angelo State University
2019	Instructor	Texas Tech University
2014 – 2019	Graduate Part-Time Instructor	Texas Tech University

### CURRICULUM DEVELOPMENT

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2023 – Current	Assistant Professor Work collaboratively to review, and potentially recommend changes to, the existing B.S. Physics degree plan.	Angelo State University
2021 – 2022	Assistant Professor Work collaboratively to explore the possibility of a new online Earth and Space Science B.A. degree. Currently on hiatus.	Angelo State University
2020	Assistant Professor Work collaboratively to develop, revise, and facilitate the transition of existing introductory physics experiments from traditional in-person delivery to completely online delivery.	Angelo State University
2017	Graduate Part-Time Instructor 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.	Texas Tech University

### UNDERGRADUATE RESEARCH MENTORING EXPERIENCE

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2023	FEM Modelling of Railgun Projectiles	Angelo State University
2022 – 2023	Voronoi Tessellation Optimization	Angelo State University
2022 – Current	Flow of Granular Particles Through a Hopper	Angelo State University
2022	Cardiogenesis in Zebrafish	Angelo State University
2021 – 2022	Low Signal-to-Noise Image Analysis (PyEDGE)	Angelo State University

2021 – 2022	AI Driven Segmentation of Images	Angelo State University
2021 – Current	Ventral Furrow Formation in <i>Drosophila</i>	Angelo State University
2021	Voronoi Tessellation of Biological Tissues	Angelo State University
2020 – 2021	Molecular Dynamics of Alpha Synuclein	Angelo State University
2020 – 2021	Silk Ballooning in <i>Erigone</i> Spiders	Angelo State University
2020	Intercellular Mechanics of Biofilms	Angelo State University
2018 – 2019	Ventral Furrow Formation in <i>Drosophila</i>	Texas Tech University

## PROFESSIONAL SERVICE

2022 – Current	Academic Drop and Withdrawal Committee Serve as member of the University committee tasked with reviewing and making recommendations to the Provost concerning policies and procedures for course drops and withdrawals, adjudicating student appeals for late course drops and withdrawal from the university, and to make recommendations on process improvement.	Angelo State University
2022 – Current	Social Media Administrator Serve as administrator and content creator for departmental social media accounts (Facebook and Instagram; also included TikTok until Texas' ban on all government devices).	Angelo State University
2021 – 2023	T&P Teaching Subcommittee Serve as chair of the departmental subcommittee tasked with developing standards and means of assessment of tenure and promotion (T&P) pillar of teaching. Responsible for scheduling meetings, coordinating between members, and guiding productive discussion during meetings.	Angelo State University
2021 – 2022	Recruitment and Retention Committee Serve as member of the departmental committee tasked with reviewing and enhancing the department's recruitment and retention activities.	Angelo State University
2021 – 2022	ADA Committee Serve as a member of the University committee tasked with studying and making recommendations regarding the University's services, policies, and practices in order to provide accessibility of facilities and services to disabled persons.	Angelo State University
2021	FREP Grant Committee Serve as a member of the University committee tasked with reviewing and evaluating yearly Faculty Research Enhancement Program (FREP) grant applications. FREP exists to support innovative research and provide seed monies to attract non-state financial support for research and creative endeavors.	Angelo State University
2020 – Current	Instructional Technology Committee Member Serve as member of the College committee tasked with establishing standards for online or hybrid course creation and review, evaluating viability of new technologies for classroom implementation, and recommending areas for instructional technology training.	Angelo State University

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2020 – Current	Women in Physics (WiP) Advisor Serve as the faculty advisor for WiP by providing guidance and support to members and officers. Assisted in establishing the first WiP group at ASU which also has the distinction of being the third WiP group in the State of Texas.	Angelo State University
2020 – Current	Society of Physics Students (SPS) Advisor Serve as a faculty advisor for SPS by providing guidance and support to members and officers.	Angelo State University
2019	HHMI IE3 Leadership Grant Committee Member Served as a member of the College committee tasked with creating a proposal for the Howard Hughes Medical Institute (HHMI) Inclusive Excellence (IE) grant to support meaningful change in diversity and inclusion.	Angelo State University
2017	RaiderReady Mentor Serve as a faculty mentor for first-generation and high-risk first-semester students.	Texas Tech University
2016 – 2019	Sigma Pi Sigma Chapter President 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.	Texas Tech University
2016	Grade Appeal Committee Member Serve as a member of the College committee tasked to review, investigate, and suggest response to student-initiated grade appeals filed with the Dean of the College of Arts and Sciences.	Texas Tech University
2014 – 2018	Discussion Coordinator and TA Trainer Meet with graduate teaching assistants (TAs) and undergraduate assistants (UGAs) 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. Work with UGAs to reinforce content knowledge and develop sound pedagogical practices.	Texas Tech University

### NOTABLE VOLUNTEER SERVICE

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2022 – Current	SPS Summer and Winter Road Shows	Angelo State University
2022	Student Research Project Mentor	Angelo State University
2020	TRIYS Research Project Mentor	Angelo State University
2019 – Current	SPS Outreach Events	Angelo State University

### PUBLICATIONS

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G.-J.J. Gao, **M.C. Holcomb**, J.H. Thomas, and J. Blawdziewicz. A Markov chain Monte Carlo model of mechanical-feedback-driven progressive apical constrictions captures the fluctuating collective cell dynamics in the *Drosophila* embryo. *Front. Phys.*, 28, 2022

**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. *PLoS Comput. Biol.*, 17(7): e1009173, 2021

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. *Phys. Rev. E*, 103(6), 2021

**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, TX, January 24, 2020

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

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

## CONFERENCE PRESENTATIONS

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**M.C. Holcomb**, G.-J.J. Gao, F.-L. Yang, and J. Blawdziewicz. Mechanisms for Enhanced Hopper Flow Rate from a Hopper with an Obstacle. Joint Spring 2022 Meeting of the Texas Section of the APS, Texas Section of the AAPT, and Zone 13 of the Society of Physics Students, Abilene, Texas, March 10-12, 2022

**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

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

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2023 CRASH – Culturally Responsive Approaches to Serving Hispanic Students; Angelo State University  
 2022 Nominated for President’s Award in Faculty Excellence for Leadership/Service; Angelo State University  
 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  
 Hybrid split-model, online, and face-to-face instruction modalities  
 Inquiry, studio, and workshop instruction modalities  
 Instructor of record for 13-200 seat sections  
 Lab Instructor for 6-60 seat sections  
 One-on-one and small group tutoring  
 Proposal writing for federal (NSF, NIH) and private (KECK Foundation) funding sources  
 Research advising for STEM and non-STEM undergraduates  
 Undergraduate and graduate student mentoring

### Programming & Computers

Bash shell scripts  
 Fortran90 based computer programming  
 Gnuplot scripts  
 Image editing and figure generation software: Affinity Designer, 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, Ubuntu  
 Video recording and editing software: Camtasia, Kaltura, Knowmia, and OpenShot  
 Video streaming software: Collaborate Ultra, WebEx, 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