

Unique ID	Date	Start Time	End Time	Session Number	Presentation Type	Session Name	Abstract Title	Presenter	Presenter
2677	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.01	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Creating honest, fair, and equitable remote introductory physics exams	Melanie	Good
2737	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.02	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Demographic Gaps in Achievement Caused By COVID-induced Campus Closure	Tom	Zhang
2950	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.03	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Standards-Based Grading Without Exams For Online Instruction	Cory	Christenson
3060	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.04	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Combining OER Resources with Online Simulations to Reduce Achievement Gap	Moe	Tabanli
2435	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.05	Invited	Achievement Gaps During Online Instruction: Lessons Learned	Impact of the transition to remote labs due to COVID-19	Heather	Lewandowski
2841	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.06	Invited	Achievement Gaps During Online Instruction: Lessons Learned	Students' Differential Experiences with Emergency Remote Teaching in Fall 2020	Michael	Vignal
3169	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.07	Invited	Achievement Gaps During Online Instruction: Lessons Learned	Decolonizing the Physics and Astronomy Classroom	Jorge G.	Moreno Soto
2751	31-Jul	12:30 PM	1:45 PM	PS.A-SA-1.08	Contributed Abstracts	Achievement Gaps During Online Instruction: Lessons Learned	Creative Astronomy: Broadening the scope of an course in Astronomy	Mel	Sabella
2417		12:30 PM	1:45 PM	PS.A-SA-2.01	Invited	Back to the Moon, and off to Mars	NASA's Artemis Program	Charles	Esty
2448		12:30 PM	1:45 PM	PS.A-SA-2.02	Invited	Back to the Moon, and off to Mars	Physical and Technical Challenges for Human Missions to Mars	Nehemiah	Williams
2450		12:30 PM	1:45 PM	PS.A-SA-2.03	Invited	Back to the Moon, and off to Mars	Using Commercial services to get to the Moon	Chris	Culbert
2540	31-Jul	12:30 PM	1:45 PM	PS.A-SA-3.02	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Stop Saying "Zero Gravity"?	Padma	Ganesh
2562	31-Jul	12:30 PM	1:45 PM	PS.A-SA-3.03	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Decision Based Learning in Conceptual Newtonian Mechanics	M. Jeannette	Lawler
2633	31-Jul	12:30 PM	1:45 PM	PS.A-SA-3.04	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Investigating Student Decision-Making when Engaging in Data Cleaning	Amanda	Adams
2672	31-Jul	12:30 PM	1:45 PM	PS.A-SA-3.05	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Improving Teaching Methodology for an Electronics Lab Course	Mugdha	Polimera
2892	31-Jul	12:30 PM	1:45 PM	PS.A-SA-3.06	Invited	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Development of a Modeling Framework for Assessment of Scientific Reasoning	Lei	Bao
2782	31-Jul	12:30 PM	1:45 PM	PS.A-SA-4.01	Contributed Abstracts	Explaining Frontiers & Modern Technology	Relativity to Muons with Physics and Dance	Sarah	Demers
2822	31-Jul	12:30 PM	1:45 PM	PS.A-SA-4.02	Contributed Abstracts	Explaining Frontiers & Modern Technology	Using the Language of Quantum Mechanics to Explain Holographic Duality	Sophia	Domokos
2403	31-Jul	12:30 PM	1:45 PM	PS.A-SA-4.03	Invited	Explaining Frontiers & Modern Technology	Teaching quantum mechanics and quantum information to high school students	Muhammad	Zubairy
2452	31-Jul	12:30 PM	1:45 PM	PS.A-SA-4.04	Invited	Explaining Frontiers & Modern Technology	Can You Surf a Gravitational Wave?: Explaining LIGO Science	Amber	Stuver
3141	31-Jul	12:30 PM	1:45 PM	PS.A-SA-4.05	Invited	Explaining Frontiers & Modern Technology	Information technology: challenges and bottlenecks	Alexey	Belyanin
2758	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.01	Contributed Abstracts	Graduate Student Education in PER	Examining the Impact of Outreach Programs on Grads versus Undergrads	Jonathan	Perry
2826	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.02	Contributed Abstracts	Graduate Student Education in PER	Graduate Students and Departmental Practices: Concerns During COVID-19	Christopher	Porter

2829	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.03	Contributed Abstracts	Graduate Student Education in PER	Attitudinal and Motivational Factors in Graduate Students: Correlations and Disparities	Christopher	Porter
2454	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.04	Invited	Graduate Student Education in PER	Graduate Reform in Physics and Astronomy: Tragedy, Policy, and Culture	MacKenzie	Lenz
2806	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.05	Invited	Graduate Student Education in PER	Vigyan Vidushi- A programmatic effort towards addressing under-representation	Deepa	Chari
2936	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.06	Contributed Abstracts	Graduate Student Education in PER	Using Deliberate Innovation to Understand Indifference in Graduate Advisor/Advisee Relationships	Erika	Cowan
2896	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.07	Contributed Abstracts	Graduate Student Education in PER	Making general relativity more accessible: the generalized geodesic deviation equation	Isaac	Waldstein
3079	31-Jul	12:30 PM	1:45 PM	PS.A-SA-5.08	Contributed Abstracts	Graduate Student Education in PER	Instructional Context for Astrophysics: Space Weather	Ronald	Freeman
2657	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.01	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Developing NGSS-aligned assessment tasks for the Next Gen PET curriculum	Stephen	Robinson
2376	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.02	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Sources of Response-Shift Bias in the CLASS's Real-World Connection	Ivy	Shaw
2491	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.03	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Tools for Identifying Effective Courses	Jayson	Nissen
2557	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.04	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Optimizing the length of computerized adaptive testing for the FCI	Jun-ichiro	Yasuda
2609	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.05	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Students' views of experimental physics in German laboratory classes	Micol	Alemani
2619	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.06	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Gaze data analysis in the interpretation of linear graphs	Sebastian	Becker
2631	31-Jul	12:30 PM	1:45 PM	PS.A-SA-6.07	Contributed Abstracts	PER: Assessment, Grading and Feedback I	Research-based Assessment Feedback for Instructors	Amali Priyanka	Jambuge
2354	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.01	Contributed Abstracts	PER: Diverse Investigations I	Roles in Collaborative Introductory Lab Activities	Danny	Doucette
2389	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.02	Contributed Abstracts	PER: Diverse Investigations I	Multilevel Module Analysis of the FCI	Christopher	Wheatley
2571	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.03	Contributed Abstracts	PER: Diverse Investigations I	Exploring Factors Influencing the Retention of Physics Majors	John	Stewart
2635	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.04	Contributed Abstracts	PER: Diverse Investigations I	Identifying Threats and Supports to Self-Efficacy Using Mixed Methods Research	Carissa	Myers
2648	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.05	Contributed Abstracts	PER: Diverse Investigations I	Student Engagement with Modeling in Multiweek Open-Ended Lab Projects	Victoria	Borish
2690	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.06	Contributed Abstracts	PER: Diverse Investigations I	Investigating Impact of Transfer Credits on Time-to-Degree using Regression Models	Alyssa	Waterson
2462	31-Jul	12:30 PM	1:45 PM	PS.A-SA-7.07	Contributed Abstracts	PER: Diverse Investigations I	Narrative Analysis of Two-Year College Transfer Student's Experiences	Laura	Wood
2878	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.01	Contributed Abstracts	PER: Diverse Investigations III	Communication Apprehension and Learning Profiles in Introductory Physics	Craig	Wiegert
2899	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.02	Contributed Abstracts	PER: Diverse Investigations III	Preparing students for impactful careers through context-rich physics learning	Anne	Leak

2907	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.03	Contributed Abstracts	PER: Diverse Investigations III	Structures that support university students' identities: An informal physics case	Claudia	Fracchiolla
2926	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.04	Contributed Abstracts	PER: Diverse Investigations III	Research on Identity Development Among Physics Transfer Students	Gina	Quan
2941	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.05	Contributed Abstracts	PER: Diverse Investigations III	Unpacking tensions in a pedagogical transition from lectures to modelling	Mashood	KK
2942	31-Jul	12:30 PM	1:45 PM	PS.A-SA-8.06	Contributed Abstracts	PER: Diverse Investigations III	Unpacking assumptions in students' reasoning about socio-technical issues	Ayush	Gupta
2305	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.01	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Impact of mathematical rigor on students' understanding of quantum optics	Paul	Justice
2397	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.02	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Evolution in student conceptual understanding of electricity and magnetism	Chandralekha	Singh
2440	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.03	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Rubrics to Teach Problem-Solving Strategies in Large Enrollment Online Courses	Josh	Rutberg
2447	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.04	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Seeking coherence and switching reasoning after forgetting an equation	Katherine	Gifford
2518	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.05	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Resolving Inconsistencies in E&M by Seeking Coherence Between Physical/Mathematical Reasoning	Gabriel	Ehrlich
2552	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.06	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Student difficulties identifying diagonal operators for degenerate perturbation theory	Christof	Keebaugh
2578	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.07	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Evaluating student ability to draw conclusions from measurement data	Tong	Wan
2589	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.08	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Pedagogical implications of synthesis problem solving	Bashirah	Ibrahim
2613	31-Jul	12:30 PM	1:45 PM	PS.A-SA-9.09	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning I	Instructional implications of findings on students' mathematics difficulties	David	Meltzer
2563	31-Jul	12:30 PM	1:45 PM	PS.A-SA-10.01	Invited	Teaching Physics While Being Disabled	Hiding Invisible Disabilities	Chanda	Prescod-Weinstein
2763	31-Jul	12:30 PM	1:45 PM	PS.A-SA-10.02	Invited	Teaching Physics While Being Disabled	Teaching through cognitive fog: How being disabled transformed my life	Rebecca	Lindell
2776	31-Jul	12:30 PM	1:45 PM	PS.A-SA-11.01	Invited	Elements of an Integrated Curriculum	Fostering synergy among mindset and skillset	Bahram	Roughani
2783	31-Jul	12:30 PM	1:45 PM	PS.A-SA-11.02	Invited	Elements of an Integrated Curriculum	Integrating computation, experimentation, projects, and human-centered applications in lab courses	Benjamin	Zwickl
3249	31-Jul	12:30 PM	1:45 PM	PS.A-SA-11.02	Invited	Elements of an Integrated Curriculum	Elements of an Integrated Curriculum	Walter	Freeman
2857	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.01	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Using Deliberative Democracy to Develop Scientific Skills through Group Collaboration	Cass	Croft
2884	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.02	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Supporting Metacognition in Physics Problem Solving.	Elien	Sijmkens
2955	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.03	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Developing Critical Thinking Skills through Laboratory Experiences	Nancy	Ruzycki

3012	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.04	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Scientific Thinking and Exploratory Discussion Posts	Anthony	Smith
3022	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.05	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Developing skills for validity checking of intuitively appealing responses	Safana	Ismael
3036	31-Jul	2:00 PM	3:15 PM	PS.B-SA-1.06	Contributed Abstracts	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Assumptions and the relative value of evidence in lab	James	Moore
2879	31-Jul	2:00 PM	3:15 PM	v	Invited	Best Practices for Developing Scientific Thinking, Reasoning, and Decision-Making Abilities	Comparing In-person and Online Physics Labs for Developing Scientific Reasoning	Kathleen	Koenig
2939	31-Jul	2:00 PM	3:15 PM	PS.B-SA-2.01	Invited	Doing Physics and Being _____	Doing Physics and Being #NotYourModelMinority	David	Marasco
3029	31-Jul	2:00 PM	3:15 PM	PS.B-SA-2.02	Invited	Doing Physics and Being _____	Doing Physics and Being Chicana and Indigena	Ximena	Cid
3147	31-Jul	2:00 PM	3:15 PM	PS.B-SA-2.03	Invited	Doing Physics and Being _____	Doing Physics and Being Unsure of How to Introduce Myself	Debbie	Andres
2577	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.01	Contributed Abstracts	Examining student-side interactions with technology	Assessing the efficacy of technological tools to teach electric fields	Liana	Rodelli
2654	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.02	Contributed Abstracts	Examining student-side interactions with technology	Developing Entrepreneurial Mindset through iOLab-based Activities in Introductory Physics Courses	Dan	Marincel
2698	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.03	Contributed Abstracts	Examining student-side interactions with technology	Augmented Reality as Assistive Tool for Electricity Lab Courses	Michael	Thees
2743	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.04	Contributed Abstracts	Examining student-side interactions with technology	Gamification of Electric Fields to Improve Students' Understanding and Engagement	Ted	Mburu
2759	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.05	Contributed Abstracts	Examining student-side interactions with technology	Resources in Introductory Physics: Multiple Modes of Engagement and Feedback	Charles	Ruggieri
2952	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.06	Contributed Abstracts	Examining student-side interactions with technology	A data driven study of students' completion of online homework	Zhongzhou	Chen
3069	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.07	Contributed Abstracts	Examining student-side interactions with technology	A Free, OER, PER-based, PER-focused Curriculum for Introductory Physics	Evan	Thatcher
2678	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.08	Invited	Examining student-side interactions with technology	Building social networking and communities in remote physics laboratories	Drew	Rosen
3144	31-Jul	2:00 PM	3:15 PM	PS.B-SA-3.09	Invited	Examining student-side interactions with technology	Science of learning with technology using multimodal self-regulated learning data	Roger	Azevedo
2386	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.01	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Video Solution to GFO for Asynchronous Community Colleges Courses	Jeffrey	Williams
2846	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.02	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	GFO implementation at an aeronautical university	Richard	Pearson
2919	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.03	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Why Physics Professors Should Take Undergrads to an AAPT Meeting!	Remi	Kauderer
3131	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.04	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Factor analysis of the PTaP.HE	Jared	Breakall
3136	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.05	Contributed Abstracts	Get the Facts Out: Changing the conversation around physics teacher recruitment	Development and user testing of STEM teacher recruitment videos	Savannah	Logan
3140	31-Jul	2:00 PM	3:15 PM	PS.B-SA-4.06	Invited	Get the Facts Out: Changing the conversation around physics teacher recruitment	The Latest and Greatest from Get the Facts Out	Wendy	Adams

2404	31-Jul	2:00 PM	3:15 PM	PS.B-SA-5.01	Invited	Integrating Computation During a Pandemic	Normalizing Computations across the Physics Curriculum	Gautam	Vemuri
2487	31-Jul	2:00 PM	3:15 PM	PS.B-SA-5.02	Invited	Integrating Computation During a Pandemic	Integrating computation in a remote introductory course	Ruth	Chabay
3155	31-Jul	2:00 PM	3:15 PM	PS.B-SA-5.03	Invited	Integrating Computation During a Pandemic	Computational tools and humane instincts: computation in a pandemic	Michelle	Kuchera
2634	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.01	Contributed Abstracts	PER: Assessment, Grading and Feedback II	What does the Force and Motion Conceptual Evaluation pretest measure?	Dona	Hewagallage
2642	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.02	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Practice exams impact on student exam preparation and performance	Tim	Stelzer
2687	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.03	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Computational Assessment in Introductory Physics: Codes From Qualitative Interview Analysis	Justin	Gambrell
2752	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.04	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Using Ranking Question to Assess Students Assistants' PCK-Q	Weston	Wegleitner
2786	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.05	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Development of an Instrument for Analysis of Student Assistants' PCK-Q	Beth	Thacker
2788	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.06	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Using research-based assessment tools in intermediate physics courses	Hong	Lin
2800	31-Jul	2:00 PM	3:15 PM	PS.B-SA-6.07	Contributed Abstracts	PER: Assessment, Grading and Feedback II	Procrastination patterns impact on assignment submission times and grade components	Megan	Nieberding
2730	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.01	Contributed Abstracts	PER: Diverse Investigations II	Can learning physics be both joyous and uncomfortable?	Camila	Monsalve
2753	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.02	Contributed Abstracts	PER: Diverse Investigations II	Identifying the key organizational components of informal physics programming	Bryan	Stanley
2781	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.03	Contributed Abstracts	PER: Diverse Investigations II	Developing fluency using multiple representations in geometrical optics.	Markku	Jaaskelainen
2842	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.04	Contributed Abstracts	PER: Diverse Investigations II	Asking Why Students and Instructors Draw Diagrams While Problem Solving	Michael	Vignal
2856	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.05	Contributed Abstracts	PER: Diverse Investigations II	Adapting Our Research During the COVID-19 Pandemic: Reflections and Implications	Vashti	Sawtelle
2859	31-Jul	2:00 PM	3:15 PM	PS.B-SA-7.06	Contributed Abstracts	PER: Diverse Investigations II	The Experience Sampling Method: Measuring the Dynamics of Students' Self-Efficacy	Rachel	Henderson
2304	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.01	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	How perception of learning environment predicts students' grades and motivational characteristics	Yangqiuting	Li
2399	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.02	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	Physics self-efficacy of male and female students controlling for grade	Sonja	Cwik
2479	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.03	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	Toward more dyslexic-friendly physics teaching	Rachel	Scherr
2629	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.04	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	How Goals Drive Physics Identity	Thomas	Head
2675	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.05	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	Examining Physicists' Perspectives of Career Viability and Knowledge of Impairment	Daniel	Oleynik

2722	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.06	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	How Early Physics Identity Constructs Predict Later Identity Constructs	Joineé	Taylor
2750	31-Jul	2:00 PM	3:15 PM	PS.B-SA-8.07	Contributed Abstracts	PER: Diversity, Equity & Inclusion I	From Land Acknowledgments to Action: Engaging with Indigenous History	Jessica	Hernandez
2382	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.01	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Remote GTA Preparation: the Good, the Bad, and the Ugly	Emily	Alicea-Munoz
2533	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.02	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Effectiveness of Action Research and RTOP for Improving Physics Lessons	Sachiko	Tosa
2560	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.03	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Teacher use of resources while integrating computational modeling into classrooms	Julia	Willison
2596	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.04	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Measure student assistants' PCK-Q in online settings during COVID pandemic	Jianlan	Wang
2632	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.05	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Analysis of LA- and TA-facilitated group work in studio classrooms	Vera	Degtiareva
2662	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.06	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Identifying Shifts in Agency In the STEP UP Ambassador Program	Benjamin	Archibeque
2682	31-Jul	2:00 PM	3:15 PM	PS.B-SA-9.07	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change I	Transitions to online physics teaching: Empathy and above average quality	Eric	Brewe
2626	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.01	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Student Conceptual Connections Within and Between Quantum Notations	William	Riihluoma
2637	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.02	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	When scaffolding doesn't work	Paula	Heron
2638	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.03	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Computation to Support Understanding of Discrete and Continuous Quantum Systems	CHRISTIAN	SOLORIO
2661	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.04	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Color-coding and student perceptions of learning in introductory mechanics	Brianna	Thomas
2663	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.05	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	How modeling informs students' engagement in sensemaking	AMOGH	SIRNOORKAR
2667	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.06	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Exploring Student Conceptual Resources About Heat and Temperature	Mikayla	Valentin
2671	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.07	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Student Resources for Understanding Momentum	Brynna	Hansen
2768	31-Jul	2:00 PM	3:15 PM	PS.B-SA-10.08	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning II	Multidimensional Item Response Theory and the BEMA: Modeling Student Thinking	John	Hansen
3047	31-Jul	2:00 PM	3:15 PM	PS.B-SA-11.01	Contributed Abstracts	Spiral Physics and Parallel Pedagogy	Spiraling Conservation of Energy/Mass in Introductory Physics: Kirchhoff to Bernoulli	Anne	Tabor-Morris
2434	31-Jul	2:00 PM	3:15 PM	PS.B-SA-11.02	Invited	Spiral Physics and Parallel Pedagogy	Spiral Physics in the Classroom	Mary	Mohr
2598	31-Jul	2:00 PM	3:15 PM	PS.B-SA-11.03	Invited	Spiral Physics and Parallel Pedagogy	Parallel Pedagogy: Seven Years, and 1000 Students Later	PETER	SCHWARTZ
2647	31-Jul	2:00 PM	3:15 PM	PS.B-SA-11.04	Invited	Spiral Physics and Parallel Pedagogy	Using OER materials, Perusall(R), and myOpenMath with Parallel Pedagogy	Dean	Stocker
2430	31-Jul	2:00 PM	3:15 PM	PS.B-SA-12.01	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Educational technology to support DEI at course and institutional levels	Melissa	Eblen Zayas

2854	31-Jul	2:00 PM	3:15 PM	PS.B-SA-12.02	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Use of physics simulations in supporting equity and student learning	Emily	Allen
2930	31-Jul	2:00 PM	3:15 PM	PS.B-SA-12.03	Contributed Abstracts	Using Educational Technology to enhance Diversity, Equity, and Inclusion	Facilitating Online Learning Communities in Large-Enrollment Introductory Physics Courses	Yasmene	Elhady
2679	31-Jul	2:00 PM	3:15 PM	PS.B-SA-12.04	Invited	Using Educational Technology to enhance Diversity, Equity, and Inclusion	The APS/IBM Research Internship for Undergraduate Women and Under-represented Minorities	Barbara	Jones
2780	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.02	Contributed Abstracts	Computation in Quantum Mechanics	Teaching quantum mechanics in an experiential learning and engaging environment	Mehdi	Ayouz
2824	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.02	Contributed Abstracts	Computation in Quantum Mechanics	Dynamics of Wave Packets Propagating in Linear and Hyperbolic Potentials	Juan	Serna
2929	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.03	Contributed Abstracts	Computation in Quantum Mechanics	Multimodal computation in quantum mechanics	Jay	Wang
2873	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.04	Invited	Computation in Quantum Mechanics	Implementation and Assessment of Computation in a Modern Physics Course	W. Brian	Lane
2984	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.05	Invited	Computation in Quantum Mechanics	Liberating undergraduate quantum mechanics through computation	Daniel	Schroeder
2997	1-Aug	12:30 PM	1:45 PM	PS.C-SU-1.06	Invited	Computation in Quantum Mechanics	Integrating Computation into a Spin First Undergraduate Quantum Mechanics Course	Jarrett	Lancaster
2471	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.01	Contributed Abstracts	Current topics in physics for all ages	Explaining physical phenomena happening on Earth and in Space.	George	Kontokostas
2659	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.02	Contributed Abstracts	Current topics in physics for all ages	Physics of Multi-photon Ionisation in Lower Hybrid Oscillation	Antony	Soosaleon
2699	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.03	Contributed Abstracts	Current topics in physics for all ages	Traditional and Digital Physics Homework in Secondary School	Dorotya	Schnider
2893	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.04	Contributed Abstracts	Current topics in physics for all ages	A Thermodynamics Approach to Introducing the Climate Crisis	Frank	Lock
2977	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.05	Contributed Abstracts	Current topics in physics for all ages	Superposition With Sporks: 3rd Graders' Analogical Models of Quantum Superposition	Devon	Christman
2989	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.06	Contributed Abstracts	Current topics in physics for all ages	Visualizing the Gravitational Landscape of the Earth-Moon System	Jack	Hlgginbotham
3068	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.07	Contributed Abstracts	Current topics in physics for all ages	Report on Pilot Study for Semiclassical Tic-Tac-Toe Online Module	Joshua	Qualls
3090	1-Aug	12:30 PM	1:45 PM	PS.C-SU-2.08	Contributed Abstracts	Current topics in physics for all ages	Fractional Calculus Approach in Supercontinuum Generation in Photonic Crystal Fibers	Andrés	González García
2359	1-Aug	12:30 PM	1:45 PM	PS.C-SU-3.01	Invited	"Ooh I want to try that!" Best new labs we've seen	Group-Worthy Physics Challenges	Joe	Cossette
2947	1-Aug	12:30 PM	1:45 PM	PS.C-SU-3.02	Invited	"Ooh I want to try that!" Best new labs we've seen	Gamify, don't simplify: Virtual activities for student intuition & motivation	Matthew	Blackman
2774	1-Aug	12:30 PM	1:45 PM	PS.C-SU-4.01	Invited	Emergent Technologies for Remote Instruction	Working together, apart, with IOLabs in remote introductory physics laboratories	Katherine	Ansell
2798	1-Aug	12:30 PM	1:45 PM	PS.C-SU-4.02	Invited	Emergent Technologies for Remote Instruction	Using Gradescope to Administer Laboratory Exercises Remotely	Dan	Young
2980	1-Aug	12:30 PM	1:45 PM	PS.C-SU-4.03	Invited	Emergent Technologies for Remote Instruction	Virtual Reality Enabling Remote Collaborative Physics Labs	Jared	Canright

3053	1-Aug	12:30 PM	1:45 PM	PS.C-SU-4.04	Invited	Emergent Technologies for Remote Instruction	Developing Augmented Reality Modules to Teach Physics	Michele	McColgan
2688	1-Aug	12:30 PM	1:45 PM	PS.C-SU-5.01	Contributed Abstracts	Ethics and Teaching in the Digital Age	The Student Experience - How to Enrich STEM Education	Dylan	Cawman
2747	1-Aug	12:30 PM	1:45 PM	PS.C-SU-5.02	Contributed Abstracts	Ethics and Teaching in the Digital Age	Roles of goals and values in ethical discussions	Tyler	GARCIA
2877	1-Aug	12:30 PM	1:45 PM	PS.C-SU-5.03	Contributed Abstracts	Ethics and Teaching in the Digital Age	Investigating How Scientists Engage in Ethical Discussions	Bill	Bridges
3054	1-Aug	12:30 PM	1:45 PM	PS.C-SU-5.04	Contributed Abstracts	Ethics and Teaching in the Digital Age	Managing inappropriate online assistance during assessments	Aaron	Paget
3019	1-Aug	12:30 PM	1:45 PM	PS.C-SU-5.05	Contributed Abstracts	Ethics and Teaching in the Digital Age	Student Reflections: Exploring Physics, Ethics, and the Military-Industrial Complex	Ciana	Pike
2424	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.01	Contributed Abstracts	Introductory Labs/Apparatus I	Integrating Bluetooth Sensors into an Web-based Lab Notebook (Pivot Interactives)	Peter	Bohacek
2427	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.02	Contributed Abstracts	Introductory Labs/Apparatus I	Computational optics in first year university physics	Duncan	Carlsmith
2704	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.03	Contributed Abstracts	Introductory Labs/Apparatus I	Flux Concept Discovery Lab	Gabriel	Spalding
2714	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.04	Contributed Abstracts	Introductory Labs/Apparatus I	Developing leadership and teamwork in labs	Nathan	Powers
2738	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.05	Contributed Abstracts	Introductory Labs/Apparatus I	Complete measurement of a damped harmonic oscillation with the Smart-Cart	Richard	Guarino
2739	1-Aug	12:30 PM	1:45 PM	PS.C-SU-6.06	Contributed Abstracts	Introductory Labs/Apparatus I	Progressing Straightforwardly by Regressing Nonlinearly	William	McCullough
2385	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.01	Contributed Abstracts	Introducing Remote Experiments to Students	A Modern Remotely Operable Arduino Approach for Advanced Physics Laboratory	Shawn	Zaleski
2607	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.02	Contributed Abstracts	Introducing Remote Experiments to Students	Deployment of a low-cost Muon Detector as a Remote Experiment	Gladys	Velez Caicedo
2664	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.03	Contributed Abstracts	Introducing Remote Experiments to Students	Less is More: At-Home Interferometry in Undergraduate Laboratory Course	Benjamin	Levy
2933	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.04	Contributed Abstracts	Introducing Remote Experiments to Students	Remotification of Five Introductory Modern Physics labs for ~\$1k apiece	Zak	Espley
3039	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.05	Contributed Abstracts	Introducing Remote Experiments to Students	Principles of Fourier optics in a take home undergraduate laboratory	Nathan	Powers
3073	1-Aug	12:30 PM	1:45 PM	PS.C-SU-7.06	Contributed Abstracts	Introducing Remote Experiments to Students	ISLE-based apparatus and video labs: student's beliefs about experimental physics	Anna	Karelina
2802	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.01	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Development of an Instrument to Assess Student Reasoning	Brianna	Santangelo
2924	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.02	Contributed Abstracts	PER: Assessment, Grading and Feedback III	FCI Higher Dimensions Determined by Analyzing Right and Wrong Responses	David	Pritchard
2951	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.03	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Motivating Student Engagement in Remote Groupwork	Karen	Cummings
3052	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.04	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Effectively Implementing Peer Review into the Introductory Physics Laboratory Course	William	Poteet
3056	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.05	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Using Deep Learning To Score Student Scientific Argumentation	Carina	Rebello
3059	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.06	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Identifying effective practices in a Standards-Based Grading System	Colin	Loxley
3097	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.07	Contributed Abstracts	PER: Assessment, Grading and Feedback III	Transforming collaborative exams to enhance student experience during remote teaching	Andrea	Jimenez Dalmaroni

2861	1-Aug	12:30 PM	1:45 PM	PS.C-SU-8.08	Contributed Abstracts	PER: Assessment, Grading and Feedback III	An approach for comparing student populations using item response curves	Paul	Walter
2683	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.01	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	Predictors of faculty sentiment on their transition to online teaching	Jillian	Mellen
2692	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.02	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	Sentiment Analysis of Faculty Responses COVID Transition to Online Learning	Colin	Green
2701	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.03	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	GTAs' Use of Pedagogical Skills in Remote Mixed-reality Training Session	Constance	Doty
2749	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.04	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	Preparing Learning Assistants to build on students' fruitful physics ideas	Lisa	Goodhew
2784	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.05	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	Interviews on professional development interactions between experienced and novice teachers	Devyn	Shafer
2790	1-Aug	12:30 PM	1:45 PM	PS.C-SU-9.06	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change II	Improving group work in studio-style physics courses	Xian	Wu
2770	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.01	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Navigating Conceptual Uncertainties and Socio-Emotional Risks in Small-Group Work	Muxin	Zhang
2793	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.02	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Supporting Student Construction of Alternative Lines of Reasoning	Mikayla	Mays
2820	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.03	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Supporting Students in Exploring Alternative Lines of Reasoning	Thomas	Fitts
2835	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.04	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Symbolic manipulation fluency predicts introductory physics students' mathematical preparedness	Dakota	King
2837	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.05	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Shared Resources in Student Problem-Solving of Spherical Unit Vectors: Example	Brant	Hinrichs
2845	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.06	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Shared-Resources in Student Problem-Solving of Spherical Unit Vectors: Theory, Methodology	Ying	Cao
2897	1-Aug	12:30 PM	1:45 PM	PS.C-SU-10.08	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning III	Implications of module analysis for instruction of one-dimensional vector manipulation	Nekeisha	Johnson
2456	1-Aug	12:30 PM	1:45 PM	PS.C-SU-11.01	Invited	Physics experiences of students from underrepresented groups	LGBT+ Physicist: Rethinking Methodology and Building Situated Knowledge	Ramon	Barthelemy
2549	1-Aug	12:30 PM	1:45 PM	PS.C-SU-11.02	Invited	Physics experiences of students from underrepresented groups	Networks of support for minoritized students in physics	Allison	Gonsalves
3157	1-Aug	12:30 PM	1:45 PM	PS.C-SU-11.03	Invited	Physics experiences of students from underrepresented groups	Identity Performances of Multiply Marginalized Physics Students at HSIs	Xandria	Quichocho
2297	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.01	Contributed Abstracts	Teaching online/remote physics classes I	Mad - Not so mad scientist	Sanjay	Dey
2901	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.02	Contributed Abstracts	Teaching online/remote physics classes I	Informal science for high school students over video conference	Hank	Yochum
2975	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.03	Contributed Abstracts	Teaching online/remote physics classes I	Paper Choreography Framing of Learning and Teaching Physics	Adebanjo	Oriade
2693	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.04	Contributed Abstracts	Teaching online/remote physics classes I	The Professor Sko Science Show YouTube Channel	Brenda	Skoczelas
2736	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.05	Contributed Abstracts	Teaching online/remote physics classes I	Using standards based grading in an online physics course	Timothy	Duman

2814	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.06	Contributed Abstracts	Teaching online/remote physics classes I	The Effectiveness of Online Education for Introductory Astronomy	Joseph	Gallagher
2895	1-Aug	12:30 PM	1:45 PM	PS.C-SU-12.07	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Interventions Designed to Help Students Recognize and Overcome Reasoning Inconsistencies	Kristin	Kellar
2291	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.01	Contributed Abstracts	Effective Practices in Educational Technology I	Creating Virtual Reality STEM Escape Rooms	Eric	Bubar
2378	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.02	Contributed Abstracts	Effective Practices in Educational Technology I	Using a Capstone Experience in the Introductory Physics Classes	Tatiana	Krivosheev
2483	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.03	Contributed Abstracts	Effective Practices in Educational Technology I	Beyond the visual: Multimodal design of physics interactive simulations	Brett	Fiedler
2484	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.04	Contributed Abstracts	Effective Practices in Educational Technology I	Swarmnotes for Live Collaborate Note-taking: Logistics and Uses	Bradley	McCoy
2485	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.05	Contributed Abstracts	Effective Practices in Educational Technology I	Swarmnotes for Live Collaborate Note-taking: Student Perspectives	Bradley	McCoy
2535	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.06	Contributed Abstracts	Effective Practices in Educational Technology I	Customizing student experiences by pushing randomized values to simulations	Matthew	Vonk
2804	1-Aug	2:00 PM	3:15 PM	PS.D-SU-1.07	Contributed Abstracts	Effective Practices in Educational Technology I	Teaching Assistants' High Impact Social Practices in Remote Physics Recitations	Charles	Ruggieri
2481	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.01	Contributed Abstracts	Introductory Courses I	Equipotentials-matching challenge: an alternative to the classic plotting lab	Richard	Zajac
2497	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.02	Contributed Abstracts	Introductory Courses I	Developing critical thinking questions for introductory physics courses	D.	Baker
2691	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.03	Contributed Abstracts	Introductory Courses I	Video-based graphical analysis homework problems	Cindy	Schwarz
2697	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.04	Contributed Abstracts	Introductory Courses I	Teaching Electric Field before Coulomb's Law	Paul	Emigh
2772	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.05	Contributed Abstracts	Introductory Courses I	Solving Kinematics Problems Using Kinematic Graphs	Calvin	Berggren
2795	1-Aug	2:00 PM	3:15 PM	PS.D-SU-3.06	Contributed Abstracts	Introductory Courses I	Modified Atwood Machine	Carl	Mungan
2773	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.01	Contributed Abstracts	Introductory Labs/Apparatus II	An Apparatus for the Lab of Uniform Circular Motion	Jingbo	Ye
2818	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.02	Contributed Abstracts	Introductory Labs/Apparatus II	Practices and Concepts in Physics Labs: Can We Do Both?	Jason	May
2867	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.03	Contributed Abstracts	Introductory Labs/Apparatus II	Measuring the Added Mass of a Falling Coffee Filter	James	Pantaleone
2902	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.04	Contributed Abstracts	Introductory Labs/Apparatus II	Student Perception of Engineering Design Activities in Introductory Physics Labs	Jason	Morphew
2979	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.05	Contributed Abstracts	Introductory Labs/Apparatus II	Martian Lander: Integrating engineering design into undergraduate introductory physics	Carina	Rebello
2982	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.06	Contributed Abstracts	Introductory Labs/Apparatus II	Graduate TA Perceptions of Engineering Design in Introductory Physics Labs	Carina	Rebello
2937	1-Aug	2:00 PM	3:15 PM	PS.D-SU-4.07	Contributed Abstracts	Introductory Labs/Apparatus II	Analysis and simulation of the non-circular fringe in Michelson interference	Xiaohong	Zhao
2495	1-Aug	2:00 PM	3:15 PM	PS.D-SU-5.01	Invited	Learning from Other Disciplines	"It was never mechanically explained": Membrane potentials in physiology	Matthew	Lira

2653	1-Aug	2:00 PM	3:15 PM	PS.D-SU-5.02	Invited	Learning from Other Disciplines	The Role of Technology in Supporting Discipline-Based Education Research	Alejandra	Magana
2808	1-Aug	2:00 PM	3:15 PM	PS.D-SU-5.03	Invited	Learning from Other Disciplines	Beyond linear regression: Analyzing common data types in DBER	Elli	Theobald
2813	1-Aug	2:00 PM	3:15 PM	PS.D-SU-5.04	Invited	Learning from Other Disciplines	Due respect: Using existing standards for instrument development	Jennifer	Lewis
2226	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.01	Contributed Abstracts	PER: Curriculum and Instruction I	Student Perceptions of Computation after Upper-Level Coursework	W. Brian	Lane
2324	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.02	Contributed Abstracts	PER: Curriculum and Instruction I	Using clicker question sequence to teach time-development in quantum mechanics	Chandralekha	Singh
2352	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.03	Contributed Abstracts	PER: Curriculum and Instruction I	The interdependence of physics self-efficacy and calculus transfer ability	Christopher	Fischer
2422	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.04	Contributed Abstracts	PER: Curriculum and Instruction I	Instructors' Impact on Students' Perceptions of Computation	Cortney	Headley
2689	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.05	Contributed Abstracts	PER: Curriculum and Instruction I	Impact of Extra Credit on Students' Cramming Behavior	Zachary	Felker
2716	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.06	Contributed Abstracts	PER: Curriculum and Instruction I	Incorporating computational activities in a general education astronomy course	Raymond	Zich
2764	1-Aug	2:00 PM	3:15 PM	PS.D-SU-6.07	Contributed Abstracts	PER: Curriculum and Instruction I	The Social Negotiation of Confusion for Physics Learning	Alli	Pfohl
2755	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.01	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Physics teachers' framings of equity and anti-racism	Tra	Huynh
2789	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.02	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Students' Use of Disability Accommodations in Emergency Remote Teaching	Erin	Scanlon
2791	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.03	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Reflective Journaling in the Era of COVID	Ana	Barrera
2821	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.04	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Evolution of Grades and Social Comparison Concern within a Course	Srividya	Suresh
2850	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.05	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	The Universal Design for Learning Instructional Practices Observation Protocol (UDL-IPOP)	Jacquelyn	Chini
2938	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.06	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Cultural Capitals Expressed through Reflective Journaling in Introductory Physics Labs	Kimberly	Coble
2956	1-Aug	2:00 PM	3:15 PM	PS.D-SU-7.07	Contributed Abstracts	PER: Diversity, Equity & Inclusion II	Experts' Perspectives on Disability in Postsecondary STEM Across Disciplines	Camile	Coffie
2792	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.01	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Using outreach programs to retain students: a systematic literature review	Madison	Swirtz
2815	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.02	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Active learning in intro courses: Study of 18 high-use departments	Alexandra	Lau
2886	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.03	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Modeling Disrupting Disenfranchising Narratives about Students in Faculty Conversations	Stephanie	Williams
2921	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.04	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Department and institution factors supporting active learning in intro courses	Christian	Merino
2973	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.05	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Teacher views of physics-based engineering activities	Alexandria	Muller

2995	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.06	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Fostering departmental change through collaboration: an analysis of two approaches	Alanna	Pawlak
3034	1-Aug	2:00 PM	3:15 PM	PS.D-SU-8.07	Contributed Abstracts	PER: Student and Instructor Support & Professional Development, Program and Institutional Change III	Enabling content-specific discussions among expert-novice teacher pairs: A case study	Maggie	Mahmood
2372	1-Aug	2:00 PM	3:15 PM	PS.D-SU-9.01	Invited	Science Advocacy, Communicating with Elected Officials and Public Policy	STEM Education and Education Research as Tools for Science Advocacy/Communication	Rebecca	Rosenblatt
2413	1-Aug	2:00 PM	3:15 PM	PS.D-SU-9.02	Invited	Science Advocacy, Communicating with Elected Officials and Public Policy	NASEM's Committee on Planetary Protection: Advocating With and For Science	Daniel	Nagasawa
2451	1-Aug	2:00 PM	3:15 PM	PS.D-SU-9.03	Invited	Science Advocacy, Communicating with Elected Officials and Public Policy	Perspectives from Inside and Outside: Advocating for Science and Policy	Gerald	Blazey
2700	1-Aug	2:00 PM	3:15 PM	PS.D-SU-9.04	Invited	Science Advocacy, Communicating with Elected Officials and Public Policy	Engaging in Policy in the Time of COVID and Beyond	Erin	Heath
3163	1-Aug	2:00 PM	3:15 PM	PS.D-SU-9.05	Invited	Science Advocacy, Communicating with Elected Officials and Public Policy	Physics: The River that Runs Through It All	Shirley	Jackson
2833	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.01	Contributed Abstracts	Teaching online/remote physics classes	Application of Red Pitaya STEMLab to Remote Advanced Laboratory Teaching	Andy	Reyna
2871	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.02	Contributed Abstracts	Teaching online/remote physics classes	Demonstrating Physics in the Remote Landscape	Monika	Wood
2888	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.03	Contributed Abstracts	Teaching online/remote physics classes	Simulation lab with mathematica	Daniel	Gebreselasi
3013	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.04	Contributed Abstracts	Teaching online/remote physics classes	Development of Online Labs for a Physics of Music Course	Sarah	Phan-Budd
3026	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.05	Contributed Abstracts	Teaching online/remote physics classes	Implementation of modified team-based learning approach in online physics courses	Edgar	Corpuz
3062	1-Aug	2:00 PM	3:15 PM	PS.D-SU-10.06	Contributed Abstracts	Teaching online/remote physics classes	Implementing and assessing guided-inquiry labs in an online format	Andrew	Boudreaux
2371	1-Aug	2:00 PM	3:15 PM	PS.D-SU-11.01	Invited	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALIs).	Department chairs report misalignment between their current and ideal departments	Rob	Dalka
2439	1-Aug	2:00 PM	3:15 PM	PS.D-SU-11.02	Invited	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALIs).	EP3: A Comprehensive, Community-Sourced Guide for Improving Departments	Theodore	Hodapp
2457	1-Aug	2:00 PM	3:15 PM	PS.D-SU-11.03	Invited	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALIs).	Toolkit for Departments Under Threat	James	Borgardt
2650	1-Aug	2:00 PM	3:15 PM	PS.D-SU-11.04	Invited	The Effective Practices for Physics Programs (EP3) Guide and Departmental Action Leadership Institutes (DALIs).	Supporting departmental change efforts with Departmental Action Leadership Institutes (DALIs)	Joel	Corbo
2428	1-Aug	2:00 PM	3:15 PM	PS.D-SU-12.01	Invited	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	How it Started, How it's Going, I'm Tired	Kevin	McChesney
3143	1-Aug	2:00 PM	3:15 PM	PS.D-SU-12.02	Invited	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Fifteen months of making physics relevant during a pandemic	Douglas	Forrest
3198	1-Aug	2:00 PM	3:15 PM	PS.D-SU-12.03	Invited	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	This Is My Normal: Navigating COVID-19 as a New Teacher	Ryan	Elder
3199	1-Aug	2:00 PM	3:15 PM	PS.D-SU-12.04	Invited	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Ready or Not? Navigating the Classroom During a Pandemic	Tiffany	Taylor
2608	1-Aug	2:00 PM	3:15 PM	PS.D-SU-13.01	Contributed Abstracts	Sharing Best Ideas: Teacher Training and Enhancement + Learning Planetaria	Using a planetarium to demonstrate the scope of the Universe	Maureen	Hintz
2948	1-Aug	2:00 PM	3:15 PM	PS.D-SU-13.02	Contributed Abstracts	Sharing Best Ideas: Teacher Training and Enhancement + Learning Planetaria	Planetaria beyond the Introductory Level	David	Klassen
2769	1-Aug	2:00 PM	3:15 PM	PS.D-SU-13.03	Contributed Abstracts	Sharing Best Ideas: Teacher Training and Enhancement + Learning Planetaria	Integrating energy and equity: A case study from teacher PD	Amy	Robertson

2847	1-Aug	2:00 PM	3:15 PM	PS.D-SU-13.04	Contributed Abstracts	Sharing Best Ideas: Teacher Training and Enhancement + Learning Planetaria	#Leadershipgoals	Shannon	Wachowski
2928	1-Aug	2:00 PM	3:15 PM	PS.D-SU-13.05	Contributed Abstracts	Sharing Best Ideas: Teacher Training and Enhancement + Learning Planetaria	Introduction to microfabrication techniques. An intensive course	Juan	Merlo-Ramirez
2558	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.01	Contributed Abstracts	AAUP and Faculty Support (Combined Session)	Supporting Faculty During the Pandemic and Beyond	Cathy	Wagner
3101	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.02	Invited	AAUP and Faculty Support (Combined Session)	Forming an AAUP Chapter at Your Institution	MICHAEL	MAGEE
2585	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.03	Invited	AAUP and Faculty Support (Combined Session)	How to talk about Sexual Harassment	Melinda	McCormick
2817	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.04	Contributed Abstracts	Effective Practices in Educational Technology II	Open and Individualized - Mechanics Homework Problems Project Using WeBWork	Jennifer	Kirkey
2830	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.05	Contributed Abstracts	Effective Practices in Educational Technology II	A remote course on acoustics for non-science majors	Milind	Kunchur
2876	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.06	Contributed Abstracts	Effective Practices in Educational Technology II	Google Sites as a Platform for Student Lab Notebooks	Kristen	Thompson
2880	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.07	Contributed Abstracts	Effective Practices in Educational Technology II	Video versus Interactive Video for Impact on Learning	Kathleen	Koenig
2881	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.08	Contributed Abstracts	Effective Practices in Educational Technology II	Updating mechanics labs with technology for the pandemic and beyond	Andrew	Gavrin
2904	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.09	Contributed Abstracts	Effective Practices in Educational Technology II	A Collaborative Approach to Designing an Introductory Computational Science Course	Claudia	Fracchiolla
2949	2-Aug	10:00 AM	11:15 AM	PS.E-MO-1.10	Contributed Abstracts	Effective Practices in Educational Technology II	Computational Modeling & Video Analysis in One Easy Environment	John	Burk
2894	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.01	Contributed Abstracts	Introductory Courses II	Impact of Remote Instruction Modality on a Two-staged Instructional Approach	Bijaya	Aryal
2909	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.02	Contributed Abstracts	Introductory Courses II	Meaningful Active Learning Environments and the Need for Scientific Practices	Paul	Bergeron
2970	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.03	Contributed Abstracts	Introductory Courses II	Chlorophyll fluoresces red!	David	Waters
3014	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.04	Contributed Abstracts	Introductory Courses II	Using Introductory Physics to Model Motion of Respiratory Aerosol Droplets	Jonathan	Bennett
3065	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.05	Contributed Abstracts	Introductory Courses II	Toward Expert Level Approaches	Marianna	Ruggerio
3087	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.06	Contributed Abstracts	Introductory Courses II	Undergraduates' understanding of vector decomposition of forces on inclined planes	Dan	Liu
2885	2-Aug	10:00 AM	11:15 AM	PS.E-MO-2.07	Contributed Abstracts	Introductory Courses II	The Costs to Persist in Introductory Physics for Pre-Health Majors	Ivanna	Morejon
2387	2-Aug	10:00 AM	11:15 AM	PS.E-MO-3.01	Invited	LGBT Physicists: Research and Perspectives	A Model of Queer STEM Identity	Allison	Mattheis
2437	2-Aug	10:00 AM	11:15 AM	PS.E-MO-3.02	Invited	LGBT Physicists: Research and Perspectives	LGBT+ Physicists: Harassment, Persistence, and Uneven Support Systems	Timothy	Atherton
2442	2-Aug	10:00 AM	11:15 AM	PS.E-MO-3.03	Invited	LGBT Physicists: Research and Perspectives	From LBGT to Queer: Physicists Without Identities	Darius	Bost
2890	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.01	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	The Leaky Pipeline in Physics Publishing	Clara	Ross
2963	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.02	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	Supporting Gender-Equity in the STEM Classroom	Lynn	Jorgensen
2965	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.03	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	Reflection on Underrepresented Curriculum Implementation in an Urban K-12 Setting	Lindsay	Owens
2396	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.04	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	Negative Impacts on female physics majors of Cold Physics Environment	Chandralekha	Singh

2715	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.05	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	Investigating the Relationship Between Motivation and Retention in Women Undergraduates	Maxwell	Franklin
2760	2-Aug	10:00 AM	11:15 AM	PS.E-MO-4.06	Contributed Abstracts	PER: Diversity, Equity & Inclusion III - Gender	Impact of Informal Physics Programs on Female Students	Tatiana	Erukhimova
2334	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.01	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Shoebox PCK: Remote physics teacher education with/on a shoestring.	James	De Winter
2358	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.02	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Recruiting Undergraduate Pre-Service Teachers with a Physics Teaching Methods Course	Allison	Daubert
2591	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.03	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Changes in Preservice Elementary Teachers' Attitudes Toward Computational Thinking	Spencer	Perry
2649	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.04	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Video Killed the Radio Star: Flipgrid for online physics pedagogy.	Richard	Hechter
3007	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.05	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	An alternative to alternative physics teacher certification in Texas	Robynne	Lock
3020	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.06	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	PhysTEC at Worcester Polytechnic Institute	Douglas	Petkie
3021	2-Aug	10:00 AM	11:15 AM	PS.E-MO-5.07	Contributed Abstracts	Preparing New Physics Teachers: New Strategies for a New Era	Developing post-emergency field work practices from lessons learned during 2020	Margery (Meg)	Gardner
2300	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.01	Contributed Abstracts	Teaching Physics - General Topics	Self energy and interaction energy in electrostatics	Prs	Murthy
2333	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.01	Contributed Abstracts	Teaching Physics - General Topics	Self energy and interaction energy in electrostatics	Prs	Murthy
2436	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.02	Contributed Abstracts	Teaching Physics - General Topics	Effect of external resistances on Newton's Second Law of motion	Amritpal	Nafria
2645	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.03	Contributed Abstracts	Teaching Physics - General Topics	Connecting Simulations to The World	Stewart	Crawford
2665	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.04	Contributed Abstracts	Teaching Physics - General Topics	Student Ownership of Lab Projects: The role of interpersonal interactions	Ira	Lasseni
2748	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.05	Contributed Abstracts	Teaching Physics - General Topics	Physics and Society: a course on power, justice, and policy	Evan	Halstead
2860	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.06	Contributed Abstracts	Teaching Physics - General Topics	Galilean transformation in electric field and magnetic field	Prs	Murthy
2882	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.07	Contributed Abstracts	Teaching Physics - General Topics	Modification of Newton's Second Law of Motion	Amritpal	Nafria
2992	2-Aug	10:00 AM	11:15 AM	PS.E-MO-6.08	Contributed Abstracts	Teaching Physics - General Topics	Characterization of optical signal by Extension Ratio & the Fiber-Length	Dr.Ved	Jha
2323	2-Aug	10:00 AM	11:15 AM	PS.E-MO-7.01	Invited	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Centering Units on Biologically and Chemically Authentic Contexts in IPLS-II	Brokk	Toggerson
2445	2-Aug	10:00 AM	11:15 AM	PS.E-MO-7.02	Invited	Teaching the Introductory Physics for the Life Sciences (IPLS) course	IPLS Research and Teaching at a Non-Research State University	Andrew	Mason
2883	2-Aug	10:00 AM	11:15 AM	PS.E-MO-7.03	Invited	Teaching the Introductory Physics for the Life Sciences (IPLS) course	Two-Semester Intermediate Course Sequence in Physics for the Life Sciences	Bradley	Roth
2411	2-Aug	10:00 AM	11:15 AM	PS.E-MO-8.01	Contributed Abstracts	Upper Division/Graduate Courses	Student difficulties with a system of identical particles	Emily	Marshman
2423	2-Aug	10:00 AM	11:15 AM	PS.E-MO-8.02	Contributed Abstracts	Upper Division/Graduate Courses	Comparing undergraduate and graduate student reasoning on conceptual entropy questionnaire	Nate	Crossette
2725	2-Aug	10:00 AM	11:15 AM	PS.E-MO-8.03	Contributed Abstracts	Upper Division/Graduate Courses	Core Content and Difficulties Reported by Quantum Information Science Instructors	Josephine	Meyer

3018	2-Aug	10:00 AM	11:15 AM	PS.E-MO-8.04	Contributed Abstracts	Upper Division/Graduate Courses	Virtual tour of the Lux-Zeppelin Dark Matter Experiment	Margaret	Norris
2958	2-Aug	10:00 AM	11:15 AM	PS.E-MO-8.05	Contributed Abstracts	Upper Division/Graduate Courses	Automation of QA in Diagnostic Modalities at CFH- Initial Experience	Pooja	Kasam
2539	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.01	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Laboratory Strategies in a Hybrid World	Adam	Lark
2547	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.02	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Challenges with Online Course Delivery for STEM Undergraduates with Disabilities	Logan	Gin
2586	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.03	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Implementing Authentic Online Assessments in Large Enrollment Introductory Courses	Yun	Zhang
2735	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.04	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Impact of virtual REU experiences on sense-of-belonging and identity.	Dina	Zohrabi Alae
2767	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.05	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Redesigning a first-year mechanics course for remote teaching during Covid-19	Muhammad	Syed
3003	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.06	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Community College Student Research Projects in the Time of COVID	Jennifer	Jones
3005	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.07	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Teaching During COVID: What to Keep Beyond the Pandemic	Tetyana	Antimirova
3043	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.08	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Remote Active Learning for Large-Enrollment Introductory Physics	Aidan	MacDonagh
3070	2-Aug	10:00 AM	11:15 AM	PS.E-MO-9.09	Contributed Abstracts	Voices from the Field: COVID and Support for Transitions in Course Delivery Modes	Lessons from Student-led Virtual Physics Outreach Efforts during the Pandemic	Roberto	Ramos
2455	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.01	Contributed Abstracts	History of Underrepresented Groups in Physics	Engaging Physics Majors in DEI Work Through a Half-credit Course	Amy	Lytle
2868	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.02	Contributed Abstracts	History of Underrepresented Groups in Physics	Hertha Ayrton (1854-1923): physicist, inventor, engineer and suffragette.	William	Palmer
2898	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.03	Contributed Abstracts	History of Underrepresented Groups in Physics	Hispanics in Physics for Today's Students	Karen	Williams
2976	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.04	Contributed Abstracts	History of Underrepresented Groups in Physics	Historical Flirtations with the Physics of the Paranormal	David	Kordahl
3066	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.05	Contributed Abstracts	History of Underrepresented Groups in Physics	The Uncelebrated Arab Genius	Scott	Bonham
2294	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.06	Invited	History of Underrepresented Groups in Physics	Importance of the Islamic Golden Age for Physics and Astronomy	Joanna	Behrman
2361	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.07	Invited	History of Underrepresented Groups in Physics	Priming Young Scientists: Identity and Physics	Samantha	Spytek
2991	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.08	Contributed Abstracts	History of Underrepresented Groups in Physics	Handling Student Resistance When Teaching About Racial Microaggressions	Erin	De Pree
2370	2-Aug	10:00 AM	11:15 AM	PS.E-MO-10.09	Contributed Abstracts	History of Underrepresented Groups in Physics	Promoting Equity and Social Justice through Culturally Responsive Astronomy Education	Christine	O'Donnell
2441	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.01	Contributed Abstracts	Upper Division Undergraduate	The Equations Match the Drawings: Geometric Algebra for Geometric Optics	Theodore	Corcovilos
2559	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.02	Contributed Abstracts	Upper Division Undergraduate	Bringing the physics back into the undergraduate quantum classroom	Jim	Freericks
2639	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.03	Contributed Abstracts	Upper Division Undergraduate	Improving Upper Division Homework Effectiveness	R. Steven	Turley

2640	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.04	Contributed Abstracts	Upper Division Undergraduate	Online Tutorials for Middle-Division Quantum with Adaptive Guidance	Giacco	Corsiglia
2803	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.05	Contributed Abstracts	Upper Division Undergraduate	A Knowledge-in-Use Assessment for Upper-Division Thermal Physics	Katherine	Rainey
2968	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.06	Contributed Abstracts	Upper Division Undergraduate	Physics Undergraduate Advanced Labs during Covid-19 Pandemic	Pratheesh	Jakkala
3044	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.07	Contributed Abstracts	Upper Division Undergraduate	Rework and Recall: Exam Performance in Upper-division Electromagnetism	Andrew	Mason
3085	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.08	Contributed Abstracts	Upper Division Undergraduate	Using Completeness Relations to Help Students Understand Wavefunctions	Elizabeth	Gire
3142	2-Aug	10:00 AM	11:15 AM	PS.E-MO-11.09	Contributed Abstracts	Upper Division Undergraduate	Reimagining Undergraduate Research in the post Covid-19 era	Sathya	Guruswamy
2459	2-Aug	10:00 AM	11:15 AM	PS.E-MO-12.01	Invited	Physics & Astronomy SEA Change Efforts	Physics and Astronomy SEA Change Pilot Progress	Alexis	Knaub
2460	2-Aug	10:00 AM	11:15 AM	PS.E-MO-12.02	Invited	Physics & Astronomy SEA Change Efforts	Physics & Astronomy SEA Change Overview and History	Beth	Cunningham
2465	2-Aug	10:00 AM	11:15 AM	PS.E-MO-12.03	Invited	Physics & Astronomy SEA Change Efforts	The Origins of SEA Change	David	Marasco
2416	4-Aug	12:30 PM	1:45 PM	PS.F-WE-1.01	Contributed Abstracts	21st Century Physics in the Classroom	Implementing Positive Psychology in International Physics Masterclass with LHC Data	Rahmat	Rahmat
2431	4-Aug	12:30 PM	1:45 PM	PS.F-WE-1.02	Contributed Abstracts	21st Century Physics in the Classroom	Fun before physics	Charles	Couch
2825	4-Aug	12:30 PM	1:45 PM	PS.F-WE-1.03	Contributed Abstracts	21st Century Physics in the Classroom	Understanding exotic gravitational wave orbits with effective potentials	Shane	Larson
2832	4-Aug	12:30 PM	1:45 PM	PS.F-WE-1.04	Contributed Abstracts	21st Century Physics in the Classroom	Instructional Implications of Introducing Quantum Physics in the Secondary Classroom	Zac	Patterson
2960	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.01	Contributed Abstracts	Effective Practices in Educational Technology III	Interactive Google doc worksheets for introductory physics	Andrew	Duffy
2986	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.02	Contributed Abstracts	Effective Practices in Educational Technology III	Group project in an online world? Yes, it works!	Kathryn	McGill
2988	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.03	Contributed Abstracts	Effective Practices in Educational Technology III	16-Spinor non-linear field realization in Faddeev-Skyrme model	Ahmed	KamilKhenyab
2999	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.04	Contributed Abstracts	Effective Practices in Educational Technology III	Is it time to abandon the calculator?	James	Gerald
3041	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.05	Contributed Abstracts	Effective Practices in Educational Technology III	Engaging Students with Escape Room Activities	Ting-Hui	Lee
3049	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.06	Contributed Abstracts	Effective Practices in Educational Technology III	Remote vs. In-Person Learning: Perceptions vs. Outcomes in Introductory Physics	Carolann	Koleci
3092	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.07	Contributed Abstracts	Effective Practices in Educational Technology III	Improving student understanding of Thermal Equilibrium with an interactive tutorial	Alexandru	Maries
3106	4-Aug	12:30 PM	1:45 PM	PS.F-WE-2.08	Contributed Abstracts	Effective Practices in Educational Technology III	Lights, camera, action! From IOP physics coach to Youtuber	Rachel	Hartley
2494	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.01	Contributed Abstracts	Integrating Computation into High School Physics	Integrating Computational Jupyter Notebook Lessons into High School Physics	Enrique	Arce-Larreta
2551	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.02	Contributed Abstracts	Integrating Computation into High School Physics	Modeling and Measuring Characteristics of a Large Amplitude Physical Pendulum	Daniel	Burns

2674	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.03	Contributed Abstracts	Integrating Computation into High School Physics	High School Physics Teachers Online Participation in Computational Waves Class	Sai	Kumar
2807	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.04	Contributed Abstracts	Integrating Computation into High School Physics	Introducing STEPP: A Resource for Physics Classrooms Utilizing Computational Thinking	Mary	Urquhart
2906	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.05	Contributed Abstracts	Integrating Computation into High School Physics	Introducing Finite State Machine based modeling into high school physics	Midori	Kitagawa
2925	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.06	Contributed Abstracts	Integrating Computation into High School Physics	Identity and social positioning in computation-integrated physics	Paul	Hamerski
2931	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.07	Contributed Abstracts	Integrating Computation into High School Physics	Vertical integration of computation into the physics curriculum	Jay	Wang
3058	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.08	Contributed Abstracts	Integrating Computation into High School Physics	The STEMcoding Object Tracker	Chris	Orban
3096	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.09	Contributed Abstracts	Integrating Computation into High School Physics	Developing and Applying a Computational Thinking Framework in Introductory Physics	Theodore	Bott
2630	4-Aug	12:30 PM	1:45 PM	PS.F-WE-3.10	Invited	Integrating Computation into High School Physics	Computational Science with 9th Grade Physics Students	Jim	Gell
2611	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.01	Contributed Abstracts	Lecture/Classroom	Using Arms to Represent Complex-Valued Vectors in Quantum Mechanics	Kelby	Hahn
2655	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.02	Contributed Abstracts	Lecture/Classroom	Comparing and Contrasting College Students At Different Institutions	Kristine	Lui
2666	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.03	Contributed Abstracts	Lecture/Classroom	Designing a Physics Course Sequence for Construction Management Majors	Jon	Gaffney
2940	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.04	Contributed Abstracts	Lecture/Classroom	Bernoulli misunderstood and the jumping coin	Martin	Monteiro
2908	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.05	Contributed Abstracts	Lecture/Classroom	Energy Transformations with Utah FORGE: Keys to Sustainable Energy Solutions	Tamara	Young
2706	4-Aug	12:30 PM	1:45 PM	PS.F-WE-4.06	Invited	Lecture/Classroom	Key biology you should have learned in physics class	Daniel	Zuckerman
2432	4-Aug	12:30 PM	1:45 PM	PS.F-WE-5.01	Invited	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Mass Extinction Caused by Gravitational Instability inside the Earth	John	Baumgardner
2438	4-Aug	12:30 PM	1:45 PM	PS.F-WE-5.02	Invited	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Most Valuable Cargo: The Tizard Mission in World War II	Bradley	McCoy
2466	4-Aug	12:30 PM	1:45 PM	PS.F-WE-5.03	Invited	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Past/Present: Does the Doomsday Clock Keep the Right Time?	Katherine	Pandora
3139	4-Aug	12:30 PM	1:45 PM	PS.F-WE-5.04	Invited	Pandemics, Wars, Catastrophes: Their Impact in the History of Physics	Learning with Objects	Allison	Marsh
2766	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.01	Contributed Abstracts	PER: Curriculum and Instruction II	Diverse strategies for design physics activity by investigating research-based activities	Amin	Bayat Barooni
2945	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.02	Contributed Abstracts	PER: Curriculum and Instruction II	Examining the dynamics of decision-making when designing curriculum in student-partnerships	Erin Ronayne	Sohr
2990	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.03	Contributed Abstracts	PER: Curriculum and Instruction II	Characterizing Active Learning Environments in Physics using Latent Profile Analysis	Kelley	Commeford
3002	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.04	Contributed Abstracts	PER: Curriculum and Instruction II	Assessing a flipped-lab course consisting of open-inquiry projects using Arduinos	Forrest	Bradbury

3010	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.05	Contributed Abstracts	PER: Curriculum and Instruction II	Learning basic physics skills via regular online mastery practice	Andrew	Heckler
3023	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.06	Contributed Abstracts	PER: Curriculum and Instruction II	Effect of PhET simulations in a general education physics course	Jeffrey	Rosauer
3025	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.07	Contributed Abstracts	PER: Curriculum and Instruction II	Building Nuance in Classroom Conversations about Ethics, Science, and Society	Brianne	Gutmann
3028	4-Aug	12:30 PM	1:45 PM	PS.F-WE-6.08	Contributed Abstracts	PER: Curriculum and Instruction II	Introducing the new Paradigms in Physics Curriculum Website	David	Roundy
2680	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.01	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Do admissions metrics predict PhD completion indirectly through graduate GPA?	Michael	Verostek
2967	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.02	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	An Introduction to Critical Race Theory for Physicists	Miguel	Rodriguez
2996	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.03	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Training Physics Learning Assistants in DEI	Sujata	Krishna
3061	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.04	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Intersection of spirituality/religiosity and physics identities for Black physics students	Saeed	Moshfeghyeganeh
3063	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.05	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Integrating Science and Social Issues in the Introductory Physics Curriculum	Eswara	Venugopal
3074	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.06	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Student Storytelling of Physicist Profiles to Promote Physics and Diversity	Roberto	Ramos
3095	4-Aug	12:30 PM	1:45 PM	PS.F-WE-7.07	Contributed Abstracts	PER: Diversity, Equity & Inclusion IV	Strength-based analysis of experiences of physics students with ADHD	Eleanor	Close
2779	4-Aug	12:30 PM	1:45 PM	PS.F-WE-8.01	Contributed Abstracts	Physics on the Road	Livestreamed Lessons: Experiences of Delivering a Virtual STEM Festival	Dawson	Nodurft
2444	4-Aug	12:30 PM	1:45 PM	PS.F-WE-8.02	Invited	Physics on the Road	Virtual Physics Demonstration Videos-A Primer	David	Maiullo
2612	4-Aug	12:30 PM	1:45 PM	PS.F-WE-8.03	Invited	Physics on the Road	Show it to U.S.	Stanley	Micklavzina
3146	4-Aug	12:30 PM	1:45 PM	PS.F-WE-8.04	Invited	Physics on the Road	Keeping the Best Parts: Learning from Online Demos and Activities	Marc	Kossover
2734	4-Aug	12:30 PM	1:45 PM	PS.F-WE-8.05	Invited	Physics on the Road	STEM Through the Screen: Experiences of adapting community outreach	Alex	Evans
2218	4-Aug	12:30 PM	1:45 PM	PS.F-WE-9.01	Invited	The Art and Science of Teaching	Teaching a Computationally Integrated Quantum Physics Course Online	Marcos	Caballero
2374	4-Aug	12:30 PM	1:45 PM	PS.F-WE-9.02	Invited	The Art and Science of Teaching	The value and logistics of student-submitted videos for homework	Andy	Rundquist
3192	4-Aug	12:30 PM	1:45 PM	PS.F-WE-9.03	Invited	The Art and Science of Teaching	Equity-oriented Classroom Practices	Gerladine	Cochran
2419	4-Aug	12:30 PM	1:45 PM	PS.F-WE-9.04	Invited	The Art and Science of Teaching	Labs in Intermediate Mechanics: Combining Student-Made Videos with Computational Modeling	Deva	O'Neil
2493	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.01	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Ya Basic: Examining the Duality of Minority-Serving Conference Experiences	Xandria	Quichocho
2545	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.02	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Publishing in the American Journal of Physics	Beth	Parks
2588	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.03	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Using Japanese Animation (Anime) for Teaching Fluid Mechanics	Sangjin	Ryu

2605	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.04	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Surface Charges from a Sensing Pixel Perspective	Maurice	Klee
2712	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.05	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	TPT Highlights from a Challenging Year	Gary	White
2719	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.06	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	The Elephant in the (Class)Room: Discussing Gender Inequality in Physics	Livvy	Eickerman
2875	4-Aug	12:30 PM	1:45 PM	PS.F-WE-10.07	Invited	Tips and Tricks for publishing in the AAPT Journals: The Physics Teacher and the American Journal of Physics	Submitting a manuscript to The Physics Teacher	Pamela	Aycock
2905	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.01	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	The conceptual development of student understanding of weight	XIANNNGQU N	ZHANG
2912	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.02	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Electric charge as a signed quantity	Alexis	Olsho
3000	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.03	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Making dual nature of human reasoning more explicit during instruction*	Alistair	McInerny
3004	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.04	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Not Quite Face to Face: Conducting Qualitative Phenomenographic Interviews virtually	Rebecca	Lindell
3051	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.05	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	A dual process based teaching intervention for terminal speed*	Andrew	Boudreaux
3055	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.06	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	The mixed messaging of algebraic variables in physics	Suzanne	Brahmia
3057	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.07	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Collaborative mechanistic reasoning in a Learning Assistant preparation session	Shahrazad	Hesaaraki
3075	4-Aug	12:30 PM	1:45 PM	PS.F-WE-11.08	Contributed Abstracts	PER: Student Content Understanding, Problem-Solving and Reasoning IV	Sense-making by manipulating apparatus and using gesture	David	Brookes
2210	1-Aug	12:30 PM	1:45 PM	PS.F-WE.01	Contributed Abstracts	High School	Identity Development through Diverse Encounters	Marianna	Ruggerio
2350	1-Aug	12:30 PM	1:45 PM	PS.F-WE.02	Contributed Abstracts	High School	Facilitating Authentic ISLE Instruction in a Virtual Environment	Danielle	Bugge
2365	1-Aug	12:30 PM	1:45 PM	PS.F-WE.03	Contributed Abstracts	High School	Teaching physics using agricultural concepts.	Diedre	Young
2489	1-Aug	12:30 PM	1:45 PM	PS.F-WE.04	Contributed Abstracts	High School	PEER Physics: Open Source Waves Unit	Jon	Mann
2520	1-Aug	12:30 PM	1:45 PM	PS.F-WE.05	Contributed Abstracts	High School	Effect of Self-Regulated Learning Worksheets on Student Understanding of Vectors	Voltaire	Mistades
2834	1-Aug	12:30 PM	1:45 PM	PS.F-WE.06	Contributed Abstracts	High School	Pushing The Limit: Students Rising To The Challenge	Edward F	Berliner
2849	1-Aug	12:30 PM	1:45 PM	PS.F-WE.07	Contributed Abstracts	High School	STS approach in High School from Brazil	Arivaldo	Lopes
2983	1-Aug	12:30 PM	1:45 PM	PS.F-WE.08	Contributed Abstracts	High School	Seeing Reality Through Einstein's Eyes: A Proposal for Special Relativity	Alessio	Leonardi
3238	1-Aug	12:30 PM	1:45 PM	PS.F-WE.09	Contributed Abstracts	High School	The Physics of Living Systems Teachers (PoLS-T) Network	Isaura	Gallegos