PREFACE

The theme of the 2017 Physics Education Research (PER) Conference was Mathematization and Physics Education Research. This theme was selected because of the increasing number of recent publications on mathematics in physics and also because of the growing connections between the PER community and the Research in Undergraduate Mathematics Education (RUME) community. Events and activities of this year's PER Conference revolved around discussions of how students conceptualize and proceduralize mathematical operations in the context of physics problem solving. This conference attracted nearly 400 participants and inspired them to engage in deep reflection of the current status of learners' approaches to mathematization as well as effective ways to improve their conceptual framing of mathematical procedures in physics problem solving. The participants also discussed a variety of other topics related to teaching and learning of physics.

The first Plenary Session, also serving as the AAPT-PERC bridging session, shone a spotlight on two invited speakers Michael Oehrtmann and Megan Wawro, who brought the audience from the physics kingdom into the mathematics arena. Michael Oehrtmann presented a talk titled "Quantitative reasoning and mathematical modeling in an introductory calculus sequence," in which he reported multiple studies of student development of mathematical expressions and equations. Megan Wawro presented a talk titled "Student understanding and symbolization of eigen-theory." In this talk she provided a unique lens on how students in quantum physics courses reason about and symbolize eigenvectors and eigenvalues for a 2x2 matrix.

Another highlight of the conference is the lunch program on the second day, in which three researchers—Andrew Boudreaux, Ayush Gupta, and David Meltzer shared their journeys of studying and improving student mathematical skills in physics classes.

This year's conference boasted a large number of presentations, including one (1) first-timer and undergraduate poster session, two (2) contributed poster sessions, and three (3) parallel clusters. One unique feature of this year's conference was that a new presentation format, namely juried talks, was introduced into the parallel clusters. Prior to the conference, authors of the juried talks submitted their proposals to the conference organizers for review. Accepted proposals then were developed into talks for presentation at the conference. Along with symposiums and invited presentations, juried talks allowed the authors to present their emerging findings from more mature research and to receive feedback for their future improvement. As a result of this new presentation format, this year's PERC Proceedings now includes a separate section for the five juried talks presented at the conference.

It is important to recognize and thank the conference organizers who sacrificed hours of after-work time to make the 2017 PERC successful. These individuals are: Steve Kanim, Suzanne White Brahmia, Michael Loverude, and John Thompson. Also playing crucial roles behind the scene to make the conference possible are the American Association of Physics Teachers (AAPT), and the Physics Education Research Leadership and Organizing Council (PERLOC).

As with the previous years, the 2017 PERC Proceedings online submission and review process was supported by Lyle Barbato and Bruce Mason who work closely with the PERC Proceedings

Editors to ensure smooth functioning of the online system. We owe Lyle and Bruce a great deal of thanks. The Editors also thank the AAPT for their sponsorship of the Proceedings as it is published on-line through comPADRE.

Last but not least, the Editors wish to thank the referees for volunteering their time and expertise to help maintain the quality of the papers published in the Proceedings. This year we had 222 reviewers who reviewed the 155 papers submitted to the Peer Reviewed Section.

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Finally, the Editors wish to express our special thanks to the PERC Coordination Committee chaired by Joel Corbo, who facilitated communications and coordinated logistics among multiple parties to make this year's PERC Proceedings a great success.

See you next summer in Washington, DC!

Lin Ding
Editor-in-Chief