2018 CONFERENCE ON LABORATORY INSTRUCTION BEYOND THE FIRST YEAR

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ACKNOWLEDGMENTS

At the 2018 Conference on Laboratory Instruction Beyond the First Year of College (BFY III), sponsored by the Advanced Laboratory Physics Association (ALPhA), 130 members of the advanced lab community as well as representatives from 15 vendors gathered to share effective lab curricula, teaching methods, and experiments. These Proceedings provide documentation of some of the 41 posters and 56 workshops that were presented as part of the conference.

This marks the second time that the Conference on Laboratory Instruction Beyond the First Year of College has published a peer-reviewed Proceedings. The Proceedings' on-line submission and review process were supported by Lyle Barbato, who provided significant support in making sure that everything ran smoothly. We thank Lyle for his effort and the excellent work that he does. In addition, this volume would not be possible without all of the referees who volunteered their time and expertise to review the papers submitted for publication in the Proceedings.

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We hope these proceedings are useful in continuing to build the advanced lab community in physics.

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Elvis Geneston

CONFERENCE OVERVIEW

2018 Conference on Laboratory Instruction Beyond the First Year (BFY III)

The theme of this conference -- "3D Physics: Integrating Experiment, Theory, and Computation" -- was inspired by both the 2014 *AAPT Recommendations for the Undergraduate Physics Laboratory Curriculum* and the more recent 2016 *AAPT Recommendations for Computational Physics in the Undergraduate Curriculum*. The former emphasizes the essential role of laboratory instruction in developing students' physics knowledge and experimental abilities in addition to many transferable skills such as modeling, design, troubleshooting, innovation, and communication. The latter recognizes the fundamental role of computation in the current practice of physics, whether to enable data acquisition, perform data modeling and analysis, or communicate results. Implementing elements from both sets of recommendations may be done efficiently by integrating the three major areas of physics – experiment, theory, and computation – in excellent advanced laboratory experiments.

As at previous BFY conferences, invited talks, workshops, breakout sessions, and posters provided opportunities for participants to share their ideas and expertise regarding specific experiments, assessment practices, developing an effective BFY laboratory curriculum, and approaches to cultivating broadly transferable skills in our students. The conference also provided time and space to discuss community-building at the local and national level. The 2018 BFY conference provided an opportunity for the advanced laboratory community to share ideas and knowledge, learn new techniques, ask questions, and plan for the future, so that we can continue to construct positive instructional laboratory experiences for our students and for ourselves. We thank all those who participated and contributed toward the success of the conference.

Organizers:
Joseph Kozminski, Lewis University (co-chair)
Mary Lowe, Loyola University Maryland (co-chair)
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Jeremiah Williams, Wittenberg University
Benjamin Zwickl, Rochester Institute of Technology

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