



“Undergraduate Physics Laboratory in the 21st Century”

A workshop held at Columbia University

On May 15th, 2019 a workshop entitled “Undergraduate Physics Laboratory in the 21st Century” was held in conjunction with the inauguration of the “Quantum Design Materials Discovery and Teaching Lab” at Columbia University. The new teaching laboratory is in Pupin Hall, a national historic landmark and home of the Columbia University physics department. Educators who are actively innovating physics instruction travelled from all over the United States to participate in the workshop and report on education and undergraduate research initiatives at their institutions.

The program began with a welcome address delivered by Professor Dimitri Basov, the Higgins Professor of Physics. James J. Valentini, Dean of Columbia College and Vice President for Undergraduate Education, and Robert Mawhinney, Chair of the Physics Department, extended the welcome addresses. They summarized the rich history of the Columbia University physics program which includes 30 Nobel Laureates associated with the department and commented on the excitement surrounding the new ideas for teaching experimental physics enabled by Quantum Design’s PPMS® VersaLab™ platform.

Speakers reported on undergraduate laboratory education and integration of laboratory instruction with research. The presentation titles included, “Integrating the QD VersaLab into the UC San Diego Condensed Matter Lab Course; Opportunities and Challenges” by Prof. Richard Averitt (UCSD), “The Senior Physics Laboratory at Yale University: Where the Ancient and Modern Collide” presented by Prof. Steve Lamoreaux (Yale), “Quasi-adiabatic Magnetocaloric Effect Measurements with a PPMS” by Prof. Karl Sandeman (CUNY), and “Structure and Interpretation of MIT Physics Junior Lab” by Prof. Sean Robinson (MIT). John Staunton, an undergraduate student at Columbia University, was in the first group to be trained on the new system. His positive experience with the VersaLab system was highlighted in his symposium presentation entitled “A 21st Century Student in a 21st Century Lab.”

In addition to topics from academic research, Dr. Stefano Spagna (Quantum Design, San Diego) presented an overview of the VersaLab in his talk “VersaLab: a new research platform for undergraduate education.”



An important highlight of the workshop was the ribbon cutting ceremony for the new Quantum Design Materials Discovery and Teaching Lab. Greg DeGeller, president of Quantum Design, was joined by Professor Jeremy Dodd who oversees undergraduate education in physics at Columbia, and Science Dean Peter de Menocal of Columbia University, to participate in the ribbon-cutting ceremony marking the official opening of the new undergraduate research laboratory. The event was attended by over 40 people and included members of Columbia University, MIT, NYU, UCSD, Yale and CUNY Physics department faculty and students.

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