PAR-D.07: 2:30-3:30 p.m. Measuring and Predicting the Mathematical Preparedness of Introductory Physics Students*

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Instructors who teach introductory physics courses may be working with the assumption that their students are fluent with middle-school- and high-school-level mathematics. As reasonable as this assumption may seem, our data, which includes over 5,000 hand-written mathematics diagnostics administered at three large state universities, has consistently shown that students struggle with basic mathematics (graphing, trigonometry, geometry, and algebra) to a significant degree. From our large and campus-diverse samples, we have found remarkable consistency between populations and have noticed interesting trends. For example, we have found specific items that seem to predict overall diagnostic performance with impressive accuracy, independent of campus and course. Here, we focus on an in-depth analysis of these predictive items while elaborating on our interpretation of the results. We will also briefly discuss our plans and ideas to address this deep-rooted issue.

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