

Session AK: PER: Exploring Problem Solving Approaches and Skills

Location: CC - Ballroom D
Sponsor: AAPT
Date: Monday, July 24
Time: 8:30–9:50 a.m.

Presider: Christopher Orban

AK04: 9-9:10 a.m. Nature of Students' Mathematical Difficulties and of Potentially Productive Remedies*

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We report on our continuing investigation of mathematical difficulties encountered by introductory physics students, and on our preliminary attempts to address these difficulties. We have previously documented high error rates on problems involving basic trigonometry, vector addition, and algebra, among students in both algebra-based and calculus-based introductory physics courses. We traced the difficulties to a combination of carelessness, insufficient practice, and conceptual misunderstandings. Through additional one-on-one interviews with students and continued analysis of students' responses on written diagnostics, we have attempted to clarify the relative contributions of these different factors, and to explore in more detail the nature of the careless errors and conceptual misunderstandings. Based in part on this work, we have begun development of instructional materials to help guide improved problem-solving performance. We will report on the current status of these various efforts.

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