

## Abstract Information

- **Title:** **Semi-Intuitive Thinking and Reasoning Inconsistencies in Calorimetry**
- Meeting:** 129th AAPT National Meeting: Sacramento, CA
- Location:** Amador 150
- Date:** Tuesday, Aug. 3
- Time:** 2:00 p.m.
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- Abstract:** As part of a project to investigate and address learning difficulties in thermal physics, we have explored students' approaches to solving calorimetry problems involving two substances with differing specific heats. We have found that students often employ various context-dependent rules-of-thumb such as "equal energy transfer implies equal temperature change," and "temperature changes are directly proportional to specific heat." Through interviews we find that students frequently get confused by, or tend to overlook, the detailed proportional reasoning or algebraic procedures that could lead to correct solutions. Instead, they often proceed with semi-intuitive reasoning that at times may be productive, but more often leads to inconsistencies and non-uniform conceptual understanding. We will present new data that indicate the occurrences of these incorrect responses are reproducible across semesters, instructors, and instructional formats.
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