** PERLOC **

**PERC 2009 Addendum**

Please note the following changes to the printed PERC2009 Program. These corrections have been implemented in the online Program and Schedule. We apologize for the inconvenience.

PERC2009 Organizers

1) **RT1 and CP.68 are cancelled:** Derya Kaltakci is not attending, so her poster (CP.68) and the Round Table Discussion are cancelled.

2) **RTD - 2: The correct version should read:**

**Cognition of an Expert Tackling an Unfamiliar Conceptual Physics** **Problem**

**(Dennison 120) Thursday, 1:30 pm**

*David Schuster, Western Michigan University, [david.schuster@wmich.edu](mailto:david.schuster@wmich.edu)*

*Adriana Undreiu, University of Virginia's College at Wise, Department of Natural Sciences*

We have investigated and analyzed in detail the cognition of an expert tackling a qualitative conceptual physics problem of an unfamiliar type.  The basic but non-trivial task was to find qualitatively the acceleration direction of a pendulum bob at various stages of its motion, originally studied by Reif and Allen.  Methodology included introspection, retrospection and self-reported metacognition. Different reasoning was used for different points on the motion path, revealing multiple facets of cognition, including its context- and background-dependence. An account will be given of the zigzag thinking paths and interplay of various reasoning modes and knowledge elements invoked. We interpret the cognitive processes using theoretical ideas such as: case-based, principle-based and experiential-intuitive reasoning; general strategies; schemata; association and transfer; cueing and interference; metacognition and epistemic frames. The rich microcosm of cognition brought out in this case study contrasts with the tidy systematic problem solutions we usually present to students.  We discuss implications for instruction in problem-solving.