

References

Reports of Project Work to Date

Published papers

1. [Meltzer 2004a] David E. Meltzer, *Investigation of students' reasoning regarding heat, work, and the first law of thermodynamics in an introductory calculus-based general physics course*, American Journal of Physics **72**, 1432-1446 (2004).
2. [Meltzer 2005a] David E. Meltzer, *Investigation of student reasoning regarding concepts in thermal physics* [invited paper], American Physical Society Forum on Education Newsletter, Spring 2005, pp. 4-5.
3. [Meltzer 2005b] David E. Meltzer, *Student learning in upper-level thermal physics: Comparisons and contrasts with students in introductory courses* [invited paper], in *2004 Physics Education Research Conference [Sacramento, California, 4-5 August 2004]*, edited by Jeffrey Marx, Paula Heron, and Scott Franklin [American Institute of Physics Conference Proceedings **790**, 31-34 (2005)].
4. [Thompson et al. 2006a] John R. Thompson, Brandon R. Bucy, and Donald B. Mountcastle, *Assessing student understanding of partial derivatives in thermodynamics*, in *2005 Physics Education Research Conference [Salt Lake City, Utah, 10-11 August 2005]*, edited by Paula Heron, Laura McCullough, and Jeffrey Marx [American Institute of Physics Conference Proceedings **818**, 77-80 (2006)].
5. [Bucy et al. 2006a] Brandon R. Bucy, John R. Thompson, and Donald B. Mountcastle, *What is entropy? Advanced undergraduate performance comparing ideal gas processes*, in *2005 Physics Education Research Conference [Salt Lake City, Utah, 10-11 August 2005]*, edited by Paula Heron, Laura McCullough, and Jeffrey Marx [American Institute of Physics Conference Proceedings **818**, 81-84 (2006)].
6. [Meltzer 2007a] David E. Meltzer, *Investigation of student learning in thermodynamics and implications for instruction in chemistry and engineering* [invited paper], *2006 Physics Education Research Conference [Syracuse, New York, 26-27 July 2006]*, edited by Paula Heron, Laura McCullough, and Leonardo Hsu [American Institute of Physics Conference Proceedings **883**, 38-41 (2007)].
7. [Bucy et al. 2007] Brandon R. Bucy, John R. Thompson, and Donald B. Mountcastle, *Student (mis)application of partial differential to material properties*, in *2006 Physics Education Research Conference [Syracuse, New York, 26-27 July 2006]*, edited by Paula Heron, Laura McCullough, and Leonardo Hsu [American Institute of Physics Conference Proceedings **883**, 157-160 (2007)].
8. [Mountcastle et al. 2007] D.B. Mountcastle, B.R. Bucy, and J.R. Thompson, *Student estimates of probability and uncertainty in advanced laboratory and statistical physics courses*, in *2007 Physics Education Research Conference [Greensboro, NC, July 2007]*, L. Hsu, C. Henderson, L. McCullough, eds., AIP Conference Proceedings **951**, 152-155 (2007).
9. [Pollock et al. 2007] E.B. Pollock, J.R. Thompson, and D.B. Mountcastle, *Student understanding of the physics and mathematics of process variables in P-V diagrams*, in *2007 Physics Education Research Conference [Greensboro, NC, July 2007]*, L. Hsu, C. Henderson, L. McCullough, eds., AIP Conference Proceedings **951**, 168-171 (2007).

Theses and Dissertations

10. Warren M. Christensen, "An investigation of student thinking regarding calorimetry, entropy, and the second law of thermodynamics." Ph.D. (Physics), Iowa State University, August 2007.
11. Brandon R. Bucy, "Investigations of student understanding of entropy and of mixed second-order partial derivatives in upper-level thermodynamics." Ph.D. (Physics), University of Maine, August 2007.

Invited presentations

1. [Meltzer 2004b] David E. Meltzer, *Students' Reasoning Regarding Fundamental Concepts in Thermodynamics: Implications for Instruction*, invited talk at the 129th National Meeting of the American

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- Association of Physics Teachers, Sacramento, California, August 3, 2004 [*AAPT Announcer* **34** (2), 121 (2004)].
2. [Meltzer 2004c] David E. Meltzer, *Student Learning in Upper-Level Thermal Physics: Comparisons and Contrasts with Students in Introductory Courses*, invited targeted poster [Session TP-C] at the 2004 Physics Education Research Conference, Sacramento, California, August 5, 2004.
 3. [Meltzer 2005c] David E. Meltzer, *Evolution of Students' Reasoning Regarding Concepts in Thermal Physics*, invited talk at the 2005 Summer Meeting of the American Association of Physics Teachers, Salt Lake City, Utah, August 9, 2005 [*AAPT Announcer* **35** (2), 112 (2005)].
 4. [Christensen 2006] Warren Christensen, *Student Understanding of Entropy and the Second Law of Thermodynamics*, invited seminar at the University of Washington, Department of Physics, Seattle, Washington, January 27, 2006.
 5. [Meltzer 2006a] David E. Meltzer, *Applying Physics Education Research to Teaching Thermodynamics*, research talk at the American Physical Society High School Physics Teachers' Day, Dallas, Texas, April 21, 2006.
 6. [Thompson 2006b] John R. Thompson, *They May Be Constant But Are They Fixed? Student Difficulties with Partial Derivatives in Thermodynamics*, invited seminar at the University of Maryland, College Park, Maryland, February 16, 2006.
 7. [Thompson 2006c] John R. Thompson, *Investigating Student Understanding in Advanced Thermal Physics Courses*, invited paper at the 2006 American Physical Society April meeting, Dallas, Texas, April 25, 2006.
 8. [Meltzer 2006b] David E. Meltzer, *Addressing Students' Reasoning Difficulties in Thermal Physics*, invited paper at the 2006 American Physical Society April meeting, Dallas, Texas, April 25, 2006.
 9. [Thompson 2006d] John R. Thompson, *Investigations of Student Understanding of Thermal Physics in the Upper Division*, invited talk at the conference on Integrating Science and Mathematics Education Research into Teaching, Orono, Maine, June 28, 2006.
 10. [Meltzer 2006c] David E. Meltzer, *Investigation of Student Learning in Thermodynamics and Implications for Instruction in Chemistry and Engineering*, invited targeted poster [Session TP-C] at the 2006 Physics Education Research Conference, Syracuse, New York, July 27, 2006.
 11. [Thompson 2006e] John R. Thompson, *Thermal Physics as a Context for Investigating Student Use of Multivariable Calculus*, invited targeted poster [Session TP-B] at the 2006 Physics Education Research Conference, Syracuse, New York, July 27, 2006.
 12. [Meltzer 2006d] David E. Meltzer, *Investigations into Student Learning of Thermodynamics*, invited talk at the 19th Biennial Conference on Chemical Education, West Lafayette, Indiana, August 2, 2006.
 13. [Thompson 2006f] John R. Thompson, *Investigations of upper-division student understanding of thermodynamics*, invited seminar at the Purdue University Chemical Education Seminar, West Lafayette, Indiana, November 8, 2006.
 14. [Thompson 2007a] John R. Thompson, *Investigating student connections between mathematics and thermal physics*, invited talk for session on *Student Difficulties with Mathematics in Upper-Division Physics* at the 2007 Winter National Meeting of the AAPT, Seattle, Washington, January 8, 2007.
 15. [Christensen 2007] Warren Christensen, *Student conceptions of entropy in an introductory physics course*, seminar at the University of Maine, Center for Science and Mathematics Education Research, Orono, Maine, April 12, 2007.
 16. [Thompson 2007b] John R. Thompson, *Student understanding of relationships between physics and mathematics concepts in upper-level thermodynamics*, University of Maine Physics & Astronomy Colloquium, Orono, Maine, April 13, 2007.
 17. [Meltzer 2007b] David E. Meltzer, *Detecting and addressing students' reasoning difficulties in thermal physics*, seminar at the University of Jyväskylä, Department of Physics, Jyväskylä, Finland, April 27, 2007.
 18. [Thompson 2007c] John R. Thompson, *Student understanding of relationships between physics and mathematics concepts in upper-level thermodynamics*, Kansas State University Physics Department Colloquium, Manhattan, Kansas, April 30, 2007.

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