

Abstract Submitted
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Applying the Energy Conservation Principle: Two Contrasting Reasoning Frames¹ LUKE WESTBROOK, ANDREW BOUDREAUX, Western Washington University — The conservation principle is an important component of a model for energy. We have identified two frames, or approaches, that novices and experts seem to adopt when reasoning about energy conservation. The first, referred to as “system-frame” reasoning, involves defining a system, tracking energy inputs and outputs across the system boundary, and relating those transfers to an accumulation or depletion of the energy contained within the system. The second approach, “energy-frame reasoning,” involves identifying some initial amount of energy and “following” that energy as it transfers and transforms in a set of interactions, until that energy is fully accounted for. In this poster, we present examples of these reasoning approaches drawn from a set of interviews conducted with undergraduate physics majors.

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