

Abstract Submitted  
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**Metacognitive gimmicks and their use by upper level physics students** GARY WHITE, TIFFANY-ROSE SIKORSKI, JUSTIN LANDAY, George Washington Univ — We report on the initial phases of a study of three particular metacognitive gimmicks that upper-level physics students can use as a tool in their problem-solving kit, namely: checking units for consistency, discerning whether limiting cases match physical intuition, and computing numerical values for reasonableness. Students in a one semester Griffiths electromagnetism course at a small private urban university campus are asked to respond to explicit prompts that encourage adopting these three methods for checking answers to physics problems, especially those problems for which an algebraic expression is part of the final answer. We explore how, and to what extent, these students adopt these gimmicks, as well as the time development of their use. While the term “gimmick” carries with it some pejorative baggage, we feel it describes the essential nature of the pedagogical idea adequately in that it gets attention, is easy for the students to remember, and represents, albeit perhaps in a surface way, some key ideas about which professional physicists care (see “Thinking like a physicist: A multi-semester case study of junior-level electricity and magnetism,” by S. V. Chasteen, S. J. Pollock, R. E. Pepper, and K. K. Perkins, *Am. J. Phys.* **80**, 923 (2012), for example).

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