Abstract Submitted
for the MAS14 Meeting of
The American Physical Society

Learn Physics by Programming in Haskell SCOTT WALCK, Lebanon Valley College — We describe a method for deepening a student's understanding of basic physics by asking the student to express physical ideas in a functional programming language. The method is implemented in a second-year course in computational physics at Lebanon Valley College. We argue that the structure of Newtonian mechanics is clarified by its expression in a language (Haskell) that supports higher-order functions and types. In electromagnetic theory, the type signatures of functions that calculate electric and magnetic fields clearly express the functional dependency on the charge and current distributions that produce the fields.

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Date submitted: 29 Aug 2014 Electronic form version 1.4