

TSF19-2019-000143

Abstract for an Invited Paper
for the TSF19 Meeting of
the American Physical Society

Computational Thinking and Problem Solving in Introductory Physics

RUTH CHABAY, University of North Texas

If we want students to perceive computation as a tool for solving physics problems, we need to convince students that computation makes problem solving easier. Constructing problems that invite computational solutions provides one incentive. Contrasting analytical and computational solutions in simple situations can set the stage for more elaborate problem solving, beginning with conceptually simple physics problems that can be easier to solve computationally than analytically. Additionally, allowing students to use a computational environment that supports vector calculations (VPython) instead of a calculator on homework and tests encourages students to become comfortable with simple coding. I'll discuss a few problems solved by students, along with initial efforts to assess the computational thinking skills developed by students in an introductory physics course that integrates computational modeling..