

Abstract Submitted  
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**Computational Physics in a Classical Mechanics Text** JAVIER

HASBUN, University of West Georgia — Earlier<sup>1</sup>, a textbook draft (now to be published<sup>2</sup>) for the junior level mechanics physics course that employs computational techniques was introduced. Here, I show more involved computations such as the interacting spring-mass system, the motion of a charged particle in 3d under both E&M fields, and the Foucault pendulum, and simulations such as a binary system, Rutherford scattering, the symmetric top, the double pendulum and the principle of least action. The text does not intend to teach students how to program, instead it makes use of students' abilities to use programming to go beyond the analytical approach. The textbook uses MATLAB<sup>3,4</sup> since its versatile and students learn it quickly. This is important to use computational physics and build on the traditional analytical approach to problem solving. While it is hoped that students have had computational physics a priori when this text is used, it is not a requirement. The textbook includes the computational code for the convenience of both, students and teachers. Experience shows that students grasp the material well and gain a deeper understanding of the subject than in the absence of the computational environment. <sup>1</sup>J. E. Hasbun, APS Bull. Vol. 51, No.1, 452 (2006). <sup>2</sup>Jones & Bartlett Publishers, 40 Tall Pine drive, Sudbury, MA 01776. <sup>3</sup>J. E. Hasbun, APS Bull. Vol 51, No.8, 46 (2006). <sup>4</sup><http://www.mathworks.com>

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