

Abstract Submitted
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A course in Computational Physics GEORGE RAWITSCHER, University of Connecticut — This course, taught at UConn, has several objectives: 1) To make the students comfortable in using MATLAB; 2) To reveal the existence of unavoidable inaccuracies due to numerical roundoff errors and algorithm inaccuracies; 3) to introduce modern spectral expansion methods [1], and compare them with conventional finite difference methods. Some of the projects assigned in the course will be described, such as the motion of a falling parachute, and the vibrations of an inhomogeneous vibrating string [2].

[1] Lloyd N. Trefethen, “Spectral Methods in MATLAB (SIAM, Philadelphia, PA, 2000)”; John P. Boyd, “Chebyshev and Fourier Spectral Methods,” (Dover Publications, Inc. Mineola, New York, Second revised edition, 2001).

[2] G. Rawitscher and J. Liss, “The vibrating inhomogeneous string,” Am. J. of Phys., to be published; and arXiv:1006.1913v1 [physics.comp-ph]

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