Chesapeake Section of the
American Association of Physics Teachers
Spring 2023 Semi-Virtual Meeting
April 1, 2023 @ JAMES MADISON UNIVERSITY.

Contribution ID: **12** Type: **talk (15-minute)**

Adaptive Step and Adaptive Order for the Parker Sochacki Method of Solving Systems of Ordinary Differential Equations.

Saturday, April 1, 2023 3:00 PM (15 minutes)

The Parker Sochacki Method (PSM) or Power Series Method of solving systems of differential equations offers a very simple, powerful, general, fast (time proportional to order squared), and effectively symplectic method for solving systems of ordinary differential equations (odes), by treating all functions as Taylor series, and equating coefficients. It comes with a priori absolute error bounds. This presentation briefly shows PSM, and then offers the theoretical principles and a couple general methods of accurately choosing an optimum adaptive step and adaptive order over a specified domain.

Primary author: RUDMIN, Joseph (James Madison University)

Presenter: RUDMIN, Joseph (James Madison University)

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