

Abstract Submitted  
for the SES06 Meeting of  
The American Physical Society

**The Parker-Sochacki Method of Solving Differential Equations:  
Applications and Limitations** JOSEPH W. RUDMIN, James Madison University  
— The Parker-Sochacki method is a powerful but simple technique of solving systems of differential equations, giving either analytical or numerical results. It has been in use for about 10 years now since its discovery by G. Edgar Parker and James Sochacki of the James Madison University Dept. of Mathematics and Statistics. It is being presented here because it is still not widely known and can benefit the listeners. It is a method of rapidly generating the Maclaurin series to high order, non-iteratively. It has been successfully applied to more than a hundred systems of equations, including the classical many-body problem. Its advantages include its speed of calculation, its simplicity, and the fact that it uses only addition, subtraction and multiplication. It is not just a polynomial approximation, because it yields the Maclaurin series, and therefore exhibits the advantages and disadvantages of that series. A few applications will be presented.

Joseph W. Rudmin  
James Madison University

Date submitted: 21 Aug 2006

Electronic form version 1.4