

Meeting: 1001, Evanston, Illinois, SS 9A, Special Session on Solving Polynomial Systems

1001-34-95 **Wenqin Zhou*** (wzhou7@uwo.ca), University of Western Ontario, Applied Mathematics
Department, 481-291 Windermere Road, London, Ontario N6G2J9, Canada, **Greg Reid**,
University of Western Ontario, and **David Jeffrey**, University of Western Ontario. *An Algebraic
Method for Analyzing Dynamic Systems.*

Our work mainly considers the analysis of mechanical systems with the two Maple software packages: DynaFlex and RifSimp. The DynaFlex package has been developed to generate the governing dynamical equations for mechanical systems by given the system description input file; the RifSimp package has been developed for the symbolic analysis of differential equations and give normalized differential equations. We will show how to use RifSimp to symbolically analysis the large symbolic dynamic equations from DynaFlex.

Of particular interest is the ability of RifSimp to split a system of differential equations into different cases; each case is based on a different set of assumptions, and under some sets of assumptions there are significant simplifications. RifSimp can analyze the system and present its results either graphically, or in list forms. We will give some very simple examples (like 3D Spinning Tops) to illustrate our work. (Received August 16, 2004)