

A TRIP INTO THE WORLD OF COMPUTER ASSISTED PROOFS IN DYNAMICAL SYSTEMS

SHELDON NEWHOUSE
MICHIGAN STATE UNIVERSITY

ABSTRACT. Numerical exploration is a very useful tool for many types of mathematics. In the case of Dynamical Systems, it shows many interesting phenomena which are difficult to actually prove. Recently, tools have become available which enable one to use the computer to prove things for which no other method is available. Such proofs are often called "Computer Assisted." The basic tools involve Interval Arithmetic and a higher order version called Taylor Model arithmetic. We review some of the methods used in this new area, giving examples and some interesting theorems for which computer assisted proofs are necessary at the present time.