1033-03-8   **Wesley C Calvert*** (`wesley.calvert@murraystate.edu`), Department of Mathematics and Statistics, Faculty Hall 6C, Murray State University, Murray, KY 42071, and **J E Porter**. *Some results in $\mathbb{R}$-computable model theory.* Preliminary report.

Due to inherent restrictions of the Turing model of computation, computable model theory has traditionally been explored almost exclusively on countable structures. In the present work, we give some preliminary results toward a more general model, using the Blum-Shub-Smale model of computation over an arbitary ring.

In this model of computation, Turing machines are replaced by objects something like flow charts, whose branchings and computations are given by polynomials, over the real numbers, for example. We take computable structures to be those whose atomic diagrams are both halting sets and complements of halting sets of such machines.

In this talk we will show that the $\mathbb{R}$-computable ordinals are exactly the countable ordinals, and will give topological characterizations for the satisfaction of certain $\mathbb{R}$-computable infinitary formulae. (Received June 13, 2007)