1107-03-32   **K J Mourad*** (`kjm57@georgetown.edu`), 37th and O Streets NW, Washington, DC 20057.
Ultraproducts of Computable Structures and Diagonailization: Skolem's Legacy.

2015 marks the centennial anniversary of what is widely regarded as the first result of modern logic, the Lowenheim-Skolem Theorem. However it is less well known that Skolem invented the Ultraproduct construction in 1934 when he introduced non-standard models of arithmetic. Both techniques are fundamental to current day model theory. One method essentially constructs structures one element at a time while the other focuses on the global properties and then defines all the elements in the structure in one fell swoop. In the context of computable structures only Skolem's first method has been explored. We will try to correct this.

In this talk we will establish a few basic results on constructions involving quotient structures of computable functions from integers to integers. We will look at diagonalization procedures to build structures that have or lack a given property. A maximal set construction using movable markers will be presented. A specific application to joint work with Rumen Dimitrov, Valentina Harizanov, and Russell Miller will be given. In addition we will explore the uses of these methods in Reverse Mathematics. (Received December 04, 2014)