1011-06-66 **Matt Insall*** (insall@umr.edu), Department of Mathematics and Statistics, University of Missouri - Rolla, Rolla, MO 65409-0020. *Lattices of Compatible Topologies for Topological Models.* Preliminary report.

Abraham Robinson introduced the study of topological models; this has been explored using standard and nonstandard methods since its inception by also Ziegler, Flum, Henson, and Insall.

Topological algebra imposes a *compatible* topology on a semigroup, group, ring, or field, etc.: the fundamental algebraic operations must be continuous. Robinson added the following to the compatibility conditions: Each fundamental relation must be either open or closed.

Recently, also, Kearnes and Sequeira, after Coleman, dealt with separation properties for compatible topologies on universal alegebras, showing how a classical result which states that any topological group (or ring or field) that is T_0 must also be Hausdorff, relates naturally to certain classically important congruence identities, such as congruence modularity and congruence k-permutability.

We expand here another classical result of traditional topological algebra and show that it still holds for topological models. Specifically, for a topological group the set of compatible topologies on the group forms a complete lattice. We will give a nonstandard proof of an analogous result for a very general notion of a topological model. (Received August 10, 2005)