1035-54-189 **Mark Burgin***, Dept. of Mathematics, University of California, Los Angeles, Los Angeles, CA 90095. *Problems of scalable topology.* Preliminary report.

Now abstract topological spaces have become tools for modeling and researching in physics, while differentiation of contemporary physics resulted in the development of mutli-scale physics. We have small-scale and high energy scale phenomena, fine scale structures, sub-grid physics, reactor-scale burning plasma physics, nanoscale physics, which is the base of nanotechnology, meso-scale physics, and large scale physics. However, scalability is not reflected in conventional topological structures. To get scalability, a topological space X is enriched by a discontinuity structure or scale Q. This gives a more realistic representation of real life phenomena and computational processes and provides for utilization of the powerful technique developed in topology. There are several kinds of continuity for mappings of scaled topological spaces: (Q,R)-continuity, weak (Q,R)-continuity, and R-continuity. Fuzzy continuous functions studied in neoclassical analysis are examples of R-continuous mappings. Different properties of scales, Q-open, Q-closed sets, and (Q,R)-continuous mappings have been obtained. The concept of scaled compactness extends the conventional notion of compact sets in topological spaces and enables a researcher to consider sets that are compact only in some scale. (Received August 14, 2007)