

# University of Oklahoma Topology Seminar

Wednesdays 3:45pm in PHSC 809

**Date:** Wednesday, October 5, 2005

**Speaker:** Leonard Rubin

**Institution:** University of Oklahoma

**Title:** *Universal Compacta in Extension Theory*

**Abstract:** It has long been known that there exist universal compacta  $X$  for any dimension  $n$  in dimension theory. This means that  $X$  is a compact metrizable space of dimension  $n$  and that every compact metrizable space of dimension  $\leq n$  embeds topologically in  $X$ . An example of this is the Cantor set which is universal for dimension 0.

For the theory of cohomological dimension over an abelian group it is not known in any case whatsoever if such universal objects exist. There is some evidence in the negative direction. Extension theory is a generalization both of dimension and cohomological dimension theories. The question of the existence of universal compacta for a particular extension theory can also be asked. In fact they do exist in those theories that resemble dimension theory in a certain way.

In this talk we will give a broad outline of what is known in the area. We will show how an easy application of the Mardešić Factorization Theorem along with the Stone-Čech Compactification proves the existence of universal compacta under certain conditions and why it fails to give information in others.