1109-54-254 **Paul Fabel***, Department of Mathematics and Statistics, Mississippi State, MS 39762. *Topological R-trees and applications.*

An R-tree is a a uniquely arcwise connected metric space such that each arc is canonically isometric to a Euclidean segment. Finitely generated groups acting on R-trees play a prominent role in geometric group theory, notably the Rips machine.

A topological R-tree is a connected, metrizable locally path connected space. Every R-tree is a topological R-tree, but it is only within the last quarter century that the converse was established, every topological R-tree underlies some R-tree.

In this talk we will discuss a new proof of the latter claim, and also a recent topological characterization of complete R-trees.

Time permitting we will mention recent joint work with Jeremy Brazas which appears to yield a general construction in which topological R-trees replace the traditional universal cover. One application to topological dynamics is the following. For each Peano continuum X, each based map $f : (X, p) \to (X, p)$ lifts to a canonical self map $F : (X^{\tilde{}}, p) \to (X^{\tilde{}}, p)$ of a topological R-tree. (Received February 02, 2015)