Department of Mathematics
University of Oklahoma

Karcher Topology Seminar
Wednesday, May 3, 2006
4:00 PM in PHSC 809
Tea at 3:30 PM in PHSC 424

Title: *Geometric topology of planar continua*
Speaker: *Dušan Repovš, University of Ljubljana*

Abstract:

This will be a survey talk on how the methods of geometric topology have proven to be quite successful in answering questions of embeddability. Basic results of embeddability theory were laid in 1930's by Claytor. In 1990's Repovš, Skopenkov and Ščpin investigated the conditions for embedding products of higher dimensional polyhedra and an interval into Euclidean space. One of the results they proved was that for each n-dimensional polyhedron X, the product $X \times I$ embeds into R^{2n+1}. More recently, Malešič, Repovš, Rosicki and Zastrow showed that such products with the unit interval often have a nonunique structure as a Cartesian product. We are interested to find out for which dimension the cone CX of an n-dimensional polyhedron X embeds into R^k. Related low-dimensional versions of this question have already been answered - it was shown by Rosicki that for a locally connected continuum, provided it embeds into R^3 and is a nontrivial Cartesian product, that either one of the factors is an arc, or that it is a simple closed curve and the other factor is also embeddable into R^2. He also proved that if X is a locally connected continuum whose cone CX embeds into R^n with $n < 4$, then X embeds into S^{n-1}. Cauty showed that if X is a locally connected continuum such that $X \times I^{n-2}$ embeds into an n-manifold, then X must be locally planar. We shall also present some new results and conjectures.