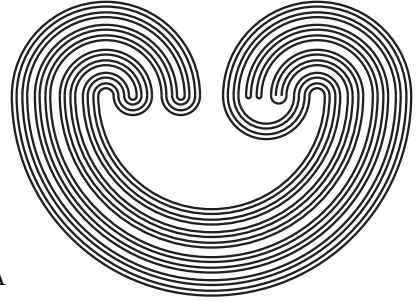


# Topology Proceedings



**Web:** <http://topology.auburn.edu/tp/>  
**Mail:** Topology Proceedings  
Department of Mathematics & Statistics  
Auburn University, Alabama 36849, USA  
**E-mail:** [topolog@auburn.edu](mailto:topolog@auburn.edu)  
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## PROBLEM SECTION

If a problem is related to a paper by the contributor, the title is given.

### F. Continuum Theory

37. (*Charles Hagopian*, “Simply connected plane continua have the fixed-point property”) (The Classical Plane Fixed-Point Problem) Does every nonseparating plane continuum have the fixed-point property?

38. (*ibid.*) (Another classical problem) Must the cone over a tree-like continuum have the fixed-point property?

39. (*ibid.*) Does the cone over a spiral to a triod have the fixed-point property?

40. (*ibid.*)(*Lysko*) Does there exist a 2-dimensional contractible continuum that admits a fixed-point-free homeomorphism?

41. (*ibid.*) (*Bing*) If  $M$  is a plane continuum with the fixed-point property, does  $M \times [0, 1]$  have the fixed-point property?

42. (*ibid.*) If  $M$  is a simply connected plane continuum, does  $M \times [0, 1]$  have the fixed-point property?

43. (*Carl Seaquist*) Does there exist a continuous decomposition of the two dimensional disk into pseudo-arcs?

### H. Homogeneity and Mappings of General Spaces

29. (*A. Arhangel'skii, W. Just, and H. Wicke*, “Not all pseudo-open maps are compositions of closed maps and open

maps”) Is there a tri-quotient (compact) mapping which is not strongly blended? Which is not blended?

30. (*ibid.*) Find topological properties other than submaximality and the  $I$ -space property that are inherited by subspaces and are preserved by open mappings and by closed mappings, but are not preserved in general by pseudo-open mappings.

## K. Connectedness and related properties

8. (*Paul Cairns*) Is there any space of transfinite cohesion?

## Topological Algebra

43. (*Judith Covington, “T-Protopological Groups”*) If  $(G, t)$  is a protopological ( $t$ -protopological) group and  $A$  and  $B$  are connected (compact) subsets containing the identity, is  $AB$  connected (compact)?

## QQ. Comparison of Topologies

1. (*Tim LaBerge*) If  $X = \bigcup_{\alpha < \kappa} X_\alpha$  has the fine topology and  $t^+(X_\alpha \leq \kappa^+)$ , is

$$t(p, X) = \sup\{t(p, X_\alpha) : \alpha < \kappa \text{ and } p \in X_\alpha\}$$

for each  $p \in X$ ?

2. (*Tim LaBerge*) If  $s^+(X) \leq \kappa$  or  $hl^+(X) \leq \kappa$ , is the fine topology the only compatible topology?

3. (*Tim LaBerge*) Is it possible to have a  $\kappa$ -chain of Hausdorff spaces with exactly two compatible Hausdorff topologies?

## V. Geometric Problems

6. (*Prof. dr hab. Ryszard J. Pawlak, “On a D-extension of a homeomorphism”*) This problem is motivated by the following theorem in the paper:

Let  $A$  and  $B$  be convex, non-singleton and strongly disjoint subsets of the plane. Then  $A$  possesses the property of a  $D$ -extension of a homeomorphism, with the  $u$ -disc on  $B$ , if and only if  $A$  and  $B$  are closed.

It seems interesting to ask the question whether the assumption of the convexity of the sets  $A$  and  $B$  can be weakened in an essential way. It could also be interesting to obtain a result analogous to the above theorem, where the domain of the transformations under consideration would be some metric space. Finally, it is worth while to raise the question: can one construct appropriate Borel extensions (or measurable ones of class  $\alpha$ )?