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
ISSN:	0146-4124

Topology Proceedings
Vol. 19, 1994

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 κ-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 α)?