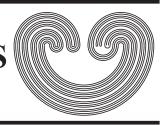
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Research Announcement: CONTRACTIBLE DENDROIDS AND EMBEDDINGS IN THE PLANE

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CONTRACTIBLE DENDROIDS AND EMBEDDINGS IN THE PLANE

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By a *continuum* we mean a compact connected metric space. A *dendroid* is a hereditarily unicoherent and arc-wise connected continuum. By a *fan* we understand a dendroid which contains at most one branch-point and we call this point the *vertex* of the fan. The following theorems have been proved:

Theorem 1. Let X be a fan which is locally connected at its vertex, then X is embeddable in the plane.

Theorem 2. Let X be a contractible fan, then X is locally connected at its vertex.

Corollary 3. Let X be a contractible fan, then X is embeddable in the plane.

We say that a space X is *monotone contractible* provided there exists a contraction H: $X \times I \rightarrow X$ such that $H | X \times \{t\}$ is monotone for each $t \in I$. Using some results of (4) we provide an internal characterization of contractibility for fans and prove:

Theorem 4. Let X be a fan, then the following are equivalent:

i. X is contractible.

ii. X is monotone contractible.

Remarks. Theorem 1 gives a solution to problem 1015 of

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(3) and Corollary 3 answers a question (problem 786) of (2).We also answer a question raised in (1) and show that none of the above can be generalized to the class of dendroids.A complete version of this paper will appear elsewhere.

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References

- D. P. Bellamy and J. J. Charatonik, The set function T and contractibility of continua, Bull. Acad. Polon. Sci. 25 (1977), 47-49.
- (2) J. J. Charatonik and C. A. Eberhart, On contractible dendroids, Colloq. Math. 25 (1972), 89-98.
- (3) J. J. Charatonik and Z. Rudy, Remarks on non-planable dendroids, Fund. Math. (to appear).
- B. G. Graham, On contractible fans, Doctoral dissertation, University of California, Riverside, California (1977).

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