http://topology.auburn.edu/tp/

TOPOLOGY PROCEEDINGS

Volume 57, 2021

Pages 37–60

http://topology.nipissingu.ca/tp/

Indecomposable Continuum with a Strong Non-Cut Point

by

Daron Anderson

Electronically published on June 10, 2020

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:	(Online) 2331-1290, (Print) 0146-4124

http://topology.auburn.edu/tp/
http://topology.nipissingu.ca/tp/

TOPOLOGY PROCEEDINGS
Volume 57 (2021)
Pages 37-60

E-Published on June 10, 2020

INDECOMPOSABLE CONTINUUM WITH A STRONG NON-CUT POINT

DARON ANDERSON

Abstract. We construct an indecomposable continuum with exactly one strong non-cut point. The method is an adaptation of Bellamy [1]. We start with an ω_1-chain of indecomposable metric continua and retractions. The inverse limit is an indecomposable continuum with exactly two composants. Our example is formed by identifying a point in each composant.

1. Introduction

Every point p of an indecomposable metric continuum M is a weak cut point. That means there are distinct $x, y \in M - p$ such that each subcontinuum $K \subset M$ with $\{x, y\} \subset K$ has $p \in K$. The proof follows from M having more than one composant; and the composant-by-composant version of the result fails. Namely some $q \in M$ might fail to weakly cut its composant $\kappa(q)$. In that case we call q a *strong non-cut point* of $\kappa(q)$. For example consider the endpoint c of the Knaster buckethandle. It is easy to see $\kappa(c) - c$ is even arcwise connected. Hence c has only trivial reasons for being a weak cut point.

There exist indecomposable non-metric continua with exactly one composant − henceforth called *Bellamy continua*. Each Bellamy continuum is simultaneously an indecomposable continuum and a composant of an

2020 *Mathematics Subject Classification.* 54F15.
Key words and phrases. Continuum, Hausdorff Continuum, Indecomposable Continuum, Composant, One Composant, Bellamy Continuum, Weak Cut Point, Cut Point, Betweenness, Inverse Limit.