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TOPOLOGY PROCEEDINGS

Volume 51, 2018

Pages 19-37

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

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by

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Electronically published on March 27, 2017

Topology Proceedings

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E-mail:	topolog@auburn.edu
ISSN:	(Online) 2331-1290, (Print) 0146-4124

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

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Volume 51 (2018)
Pages 19-37

E-Published on March 27, 2017

REMARKS ON POINTED DIGITAL HOMOTOPY

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Abstract. We present and explore in detail a pair of digital images with c_u-adjacencies that are homotopic but not pointed homotopic. For two digital loops $f, g : [0, m]_Z \to X$ with the same basepoint, we introduce the notion of *tight at the basepoint (TAB)* pointed homotopy, which is more restrictive than ordinary pointed homotopy and yields some different results.

We present a variant form of the digital fundamental group. Based on what we call *eventually constant* loops, this version of the fundamental group is equivalent to that of [2], but offers advantages that we discuss.

We show that homotopy equivalent digital images have isomorphic fundamental groups, even when the homotopy equivalence does not preserve the basepoint. This assertion appeared in [3], but there was an error in the proof; here, we correct the error.

1. Introduction

Digital topology adapts tools from geometric and algebraic topology to the study of digital images. Fundamental questions concerning the form and motion of a digital image are considered using tools of this field. The following appears in the abstract of [18].

> Digital topology deals with the topological properties of digital images.... It provides the theoretical foundations for important image processing operations such as connected component labeling and counting, border following, contour filling, and thinning - and their generalizations to three- (or higher-) dimensional "images."

2010 *Mathematics Subject Classification.* 55Q99.

Key words and phrases. Digital topology, digital homotopy, homotopy equivalence, fundamental group.