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

TOPOLOGY PROCEEDINGS

Volume 55, 2020

Pages 127–145

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

Spaces with regular nonabelian self covers II

by

Mathew Timm

Electronically published on June 6, 2019

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 55 (2020)
Pages 127-145

E-Published on June 6, 2019

SPACES WITH REGULAR NONABELIAN SELF COVERS II

MATHEW TIMM

Abstract. We produce a disk with countably many holes which has, for each finite group G, a regular self cover with group of deck transformations isomorphic to G. This disk with holes is then used to produce other examples of continua with the same self covering property.

This is the second of two papers motivated by the problem of finding continua X which have regular self covers $f : X \to X$ with a nonabelian group of deck transformations. In the first paper, joint work with Alberto Delgado [7], the question about existence of such spaces is answered very strongly in the affirmative. It is shown that there are two metric continua, one infinite dimensional and one 1-dimensional, which have the property that given any finite group G, each of the continua has a regular $|G|$-fold self cover with the associated group of deck transformations isomorphic to G. Thus, each of these continua satisfies the *universal regular finite-sheeted (URF) self cover property*: they have regular self covers with group of deck transformations isomorphic to G for *every* finite group G. Consequently, these continua have regular self covers with deck transformations isomorphic to every finite nonabelian G. The one dimensional continuum turns out to be homeomorphic to the Sierpinski curve (aka, the Sierpinski carpet) $\mathcal{S}$.

2010 *Mathematics Subject Classification.* Primary 54F15, 54C10; Secondary 20B25, 57M10.

Key words and phrases. Regular covering space, disk with holes, control set, patterned space, Sierpinski curve, non-cohopfian group.

Thanks to the participants in the Dynamical Systems and Continuum Theory session of the 33rd Summer Conference on Topology and its Applications and the referee for their interest in these results.