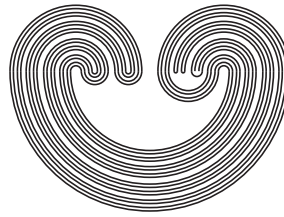


<http://topology.auburn.edu/tp/>

TOPOLOGY PROCEEDINGS



Volume 47, 2016

Pages 207–220

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

EXTENSIONS OF ULTRAMETRIC SPACES

by

COLLINS AMBURO AGYINGI

Electronically published on October 16, 2015

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers.

See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.

Topology Proceedings

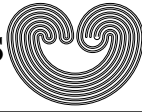
Web: <http://topology.auburn.edu/tp/>

Mail: Topology Proceedings
Department of Mathematics & Statistics
Auburn University, Alabama 36849, USA

E-mail: topolog@auburn.edu

ISSN: 0146-4124

COPYRIGHT © by Topology Proceedings. All rights reserved.



EXTENSIONS OF ULTRAMETRIC SPACES

COLLINS AMBURO AGYINGI

ABSTRACT. The concept of the tight span of a metric space was introduced and studied by Dress. It is known that his (Dress) theory is equivalent to the theory of the injective hull of a metric space independently discussed by Isbell some years earlier. Dress showed in particular that for a metric space X the tight extension T_X is maximal among the tight extensions of X . In a paper by Bayod et al., it was shown that Isbell's approach can be modified to work similarly for ultrametric spaces. They went ahead and constructed the tight extension for an arbitrary ultrametric space X , which in this article we shall call the ultrametric tight (*um-tight*) extension of X and is denoted uT_X . Continuing that work we show in the present paper that large parts of the theory developed by Dress do not use the triangle inequality of the metric and when appropriately modified will hold unchanged for ultrametric spaces. In particular we shall show that for an ultrametric space X , uT_X is a maximal (among the *um-tight*) extensions of X .

1. INTRODUCTION

We say that a metric space Y is “injective” if every mapping which increases no distance from a subspace of any metric space X to Y can be extended, increasing no distance, over X . These spaces were introduced in [2] by Aronszajn and Panitchpakdi, and they called them “hyperconvex.”

2010 *Mathematics Subject Classification.* Primary 54X10, 58Y30, 18D35; Secondary 55Z10.

Key words and phrases. Hyperconvexity, injective hull, *um-tight* extension.

The author was supported in part by a research fund #139000 from the Research B-Budget of the University of South Africa.

The author will like to thank the referee for the many suggestions he provided that has greatly improved the quality of the paper.

©2015 Topology Proceedings.

This file contains only the first page of the paper. The full version of the paper is available to Topology Proceedings subscribers. See <http://topology.auburn.edu/tp/subscriptioninfo.html> for information.