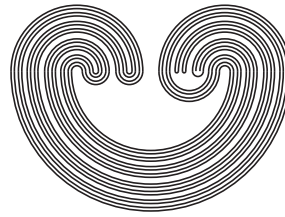


<http://topology.nipissingu.ca/tp/>

---

# TOPOLOGY PROCEEDINGS



Volume 65, 2025

Pages 135–148

---

## ON LOCAL COMPACTNESS OF SPACES OF CONTINUOUS VALUATIONS

by

JEAN GOUBAULT-LARRECQ

Electronically published on November 23, 2024

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.nipissingu.ca/tp/subscriptioninfo.html> for information.

---

### Topology Proceedings

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

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

**E-mail:** [topolog@auburn.edu](mailto:topolog@auburn.edu)

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

COPYRIGHT © by Topology Proceedings. All rights reserved.

## ON LOCAL COMPACTNESS OF SPACES OF CONTINUOUS VALUATIONS

JEAN GOUBAULT-LARRECQ

**ABSTRACT.** We show that the spaces of continuous valuations, resp. subprobability valuations on a locally compact space is locally compact; similarly with probability valuations on locally compact, compact spaces. Continuous valuations are close cousins of measures. No separation property is assumed.

### 1. INTRODUCTION

A *continuous valuation* on a topological space  $X$  is a close cousin of a Borel measure. Continuous valuations on  $X$  form a space  $\mathbf{V}X$ , with a topology known as the weak topology, and similarly for the subspaces  $\mathbf{V}_{\leq 1}X$  of subprobability valuations and  $\mathbf{V}_1X$  of probability valuations. We will define these notions more precisely below. It is known that  $\mathbf{V}_{\leq 1}$  preserves various properties: stable compactness [2, Theorem 39], being a continuous dcpo [16, Theorem 5.2], being a quasi-continuous dcpo [14, Theorem 5.1], for example. Some of these preservation theorems extend over to  $\mathbf{V}_1$  or to  $\mathbf{V}$ , but a conspicuously absent property in the list is local compactness. This is what we address in this paper.

---

2020 *Mathematics Subject Classification.* Primary 54G99; Secondary 28A33, 68Q55.

*Key words and phrases.* Continuous valuations, spaces of measures, local compactness, previsions.

©2024 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.nipissingu.ca/tp/subscriptioninfo.html> for information.