



University
of Victoria

Graduate Studies

Notice of the Final Oral Examination
for the Degree of Master of Science

of

GAVIN GOERKE

BSc (American University of Paris, 2020)

**“A Uniqueness Theorem for C^* -algebras
of Hausdorff Étale Groupoids”**

Department of Mathematics and Statistics

Tuesday, April 18, 2023

10:00 A.M.

David Strong Building

Room C124

Supervisory Committee:

Dr. Marcelo Laca, Department of Mathematics and Statistics, University of Victoria (Co-Supervisor)

Dr. Christopher Eagle, Department of Mathematics and Statistics, UVic (Co-Supervisor)

External Examiner:

Dr. John Spielberg, School of Mathematical and Statistical Sciences, Arizona State University

Chair of Oral Examination:

Dr. Kin Fun Li, Department of Electrical and Computer Engineering, UVic

Abstract

In this thesis we study the ideal intersection property for inclusions of C^* -algebras $C_r^*(H_\alpha) \hookrightarrow C_r^*(G)$ induced from a family of open subgroupoids $\{H_\alpha\}$ of a locally compact Hausdorff étale groupoid G . For such a family of open subgroupoids we define the notion of relative topological principality and we show that if G is relatively topologically principal to $\{H_\alpha\}$ then a representation of $C_r^*(G)$ is faithful if and only if the restriction of the representation to each of the subalgebras $C_r^*(H_\alpha)$ is faithful. This gives a new method of verifying injectivity of representations of reduced groupoid C^* -algebras. As an application of our result we prove a uniqueness theorem for C^* -algebras of left cancellative small categories which generalizes a theorem of Marcelo Laca and Camila Sehnm for Toeplitz algebras of group embeddable monoids.