



# Analysis Seminar

## A GENERAL DILATION THEOREM FOR OPERATOR VALUED POSITIVE SEMIDEFINITE KERNELS OF BARRELLED VH-SPACES

By  
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**Abstract:** This is a continuation of a previous talk in the Analysis Seminar. In order to make the talk accessible for undergraduate students, we will review order structures in complex vector spaces, locally convex topologies and inner products briefly.

A VH-space (Vector Hilbert Space in the sense of Loynes) is a complex complete locally convex vector space with a topologically ordered  $*$ -space valued inner product, such that its locally convex topology is induced by the topology of the specified topologically ordered  $*$ -space. Important special cases of VH-spaces include the chain of locally Hilbert  $C^*$ -modules, Hilbert  $C^*$ -modules and Hilbert Spaces.

We will discuss a general dilation theorem for positive semidefinite kernels valued in adjointable operators on a barrelled VH-space. We prove that under barrelledness assumption, a necessary and sufficient condition for the existence of a certain linearisation of the kernel, or equivalently, representation of the kernel on a reproducing kernel VH-space, is satisfied automatically. We also discuss applications of the theorem as time allows.

**Date:** Monday, October 14, 2019

**Time:** 14:00-15:00

**Place:** Mathematics Seminar Room, SA – 141

Tea and cookies will be served before the seminar.