

## Non Commutative $L^p$ Spaces as Hilbert Modules

**Authors :** Salvatore Triolo

**Abstract :** We discuss the possibility of extending the well-known Gelfand-Naimark-Segal representation to modules over a  $C^*$ -algebra. We focus our attention on the case of Hilbert modules. We consider, in particular, the problem of the existence of a faithful representation. Non-commutative  $L^p$ -spaces are shown to constitute examples of a class of  $CQ^*$ -algebras. Finally, we have shown that any semisimple proper  $CQ^*$ -algebra  $(X, A\#)$ , with  $A\#$  a  $W^*$ -algebra can be represented as a  $CQ^*$ -algebra of measurable operators in Segal's sense.

**Keywords :** Gelfand-Naimark-Segal representation,  $CQ^*$ -algebras, faithful representation, non-commutative  $L^p$ -spaces, operator in Hilbert spaces

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