Induced Representations of Crossed Products

by Coactions

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§0 Introduction

Let $\delta : A \to \tilde{M}(A \otimes C_r^*(G))$ be a coaction of a locally compact group G on a C^*-algebra A. Then for any closed normal amenable subgroup H of G we define a coaction $\delta| : A \to \tilde{M}(A \otimes C_r^*(G/H))$ of G/H on A. We present dense $*$-subalgebras of the crossed products $A \times_\delta G$ and $A \times_{\delta|} (G/H)$ and use these to obtain a process whereby representations of $A \times_\delta G$ may be constructed from those of $A \times_{\delta|} (G/H)$. We then classify those representations of $A \times_\delta G$ which can be obtained in this way. In other words we exhibit an induction process and formulate an imprimitivity theorem for it. Finally we examine an elegant reformulation of Green's imprimitivity theorem suggested by the above results.

Proof of these results is to be found in my doctoral thesis, [8].

§1 Background

Firstly we establish some notation. $B(\mathcal{H})$ will denote the bounded linear operators on the Hilbert space $\mathcal{H}$ and $K(\mathcal{H})$ the closed ideal of compact operators on $\mathcal{H}$.