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Noncommutative L^p Modules.

ABSTRACT. A von Neumann algebra \mathcal{M} is commonly considered a noncommutative L^∞ space; to it one can associate a noncommutative L^p space. It is well-known, but underappreciated, that $L^p(\mathcal{M})$ has good manners as a module. In this talk I will explain how to use $L^p(\mathcal{M})$ to generate a full L^p representation theory. There are many directions to go. In addition to explaining the basic definitions, I will at least (i) discuss sets of intertwiners, generalizing the known description

of the commutant for $p \geq 1$; (ii) give an abstract characterization using an inner product; (iii) point out similarities and differences with Hilbert space representations ($p = 2$) and Hilbert C^* -modules ($p = \infty$). Intervening moments may be spent on examples and a surprisingly restrictive bimodule theory. This is joint work with Marius Junge.