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Daniel J Hoff* (d1hoff@ucsd.edu). *Von Neumann Algebras of Equivalence Relations with Nontrivial One-Cohomology.*

A natural question in the classification of von Neumann algebras asks which type II_1 factors are prime, i.e. which II_1 factors cannot be written as the tensor product of two diffuse von Neumann subalgebras. Peterson showed that the group von Neumann algebra $L(\Gamma)$ is prime for any countable group Γ which admits an unbounded 1-cocycle into the left regular representation. In this talk, we focus on the case of the von Neumann algebra $L(\mathcal{R})$ for a countable ergodic pmp equivalence relation \mathcal{R} and give an analogous result in this case: $L(\mathcal{R})$ is prime for any nonamenable \mathcal{R} which admits an unbounded 1-cocycle into a mixing orthogonal representation weakly contained in the regular representation. We outline a proof based on Popa's powerful deformation/rigidity theory. (Received September 16, 2014)