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Lauren C. Ruth* (ruth@math.ucr.edu). *Two new settings for examples of von Neumann dimension.*

Let $G = PSL(2, \mathbb{R})$, let Γ be a lattice in G , and let \mathcal{H} be an irreducible unitary representation of G with square-integrable matrix coefficients. A theorem in Goodman–de la Harpe–Jones (1989) states that the von Neumann dimension of \mathcal{H} as a $W^*(\Gamma)$ -module is equal to the formal dimension of the discrete series representation \mathcal{H} times the covolume of Γ , calculated with respect to the same Haar measure. We will present two results inspired by this theorem. First, we show there is a representation of $W^*(\Gamma)$ on a subspace of cuspidal automorphic functions in $L^2(\Lambda \backslash G)$, where Λ is any other lattice in G , and $W^*(\Gamma)$ acts on the right; and this representation is unitarily equivalent to one of the representations in [GHJ]. Next, we calculate von Neumann dimensions when G is $PGL(2, F)$, for F a local non-archimedean field of characteristic 0 with residue field of order not divisible by 2; Γ is a torsion-free lattice in $PGL(2, F)$, which, by a theorem of Ihara, is a free group; and \mathcal{H} is the Steinberg representation, or a depth-zero supercuspidal representation, each yielding a different dimension. (Received January 18, 2018)