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The Fuglede conjecture holds in $\mathbb{Z}_p^2 \times \mathbb{Z}_q^2$

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We examine the Fuglede's Conjecture, which in a given context states that spectral sets and tiling sets are the same sets. This problem was first proposed in the 1970s over $\mathbb{R}^d$ and there has been interest in the discrete version of the problem since the 2000s, as counterexamples there can be lifted to the euclidean case. Techniques of discrete geometry are used to examine tiling and spectral sets in this setting, allowing us to prove that this holds on the family of groups of the form $\mathbb{Z}_p^2 \times \mathbb{Z}_q^2 \cong \mathbb{Z}_{pq}^2$.