<u>Example</u>: Consider $A = \begin{pmatrix} 2 & 0 \\ 0 & 2/3 \end{pmatrix}$ and $\Gamma = \mathbb{Z}^2$.

No wavelet set exists for $(A, \Gamma)$. Why not?

Let $\mathcal{U} = ([-2,-1] \cup [1,2]) \times \mathbb{R}$. If $W$ is an $(A, \Gamma)$ wavelet set, then $W_j := A^{-j}(\mathcal{U}) \cap W$ satisfies the following two properties:

① $m((W_j + \gamma_1) \cap (W_j + \gamma_2)) = 0$ whenever $\gamma_1 \neq \gamma_2 \in \Gamma$.

(We say $W_j$ <u>packs</u> by $\Gamma$ translations.)

② $\displaystyle\sum_{j \in \mathbb{Z}} m(A^j(W_j)) = \infty$.

(Why? $\displaystyle\mathcal{U} = \bigcup_{j \in \mathbb{Z}} A^j(W_j)$.)