

**A HARMONIC REPRESENTATION OF A SQUARE LATTICE  
SPLIT AT ONE POINT.**

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A graph embedded (or represented) in an Euclidean space is called harmonic if all vertices are positioned at the centroids of their adjacent vertices. Consider a square lattice and replace the  $X$ -shaped graph near the origin with an  $H$ -shaped graph. Then, we calculate specifically how much perturbation is needed for each vertex to reproduce harmonic representation. We use a random walk on the square lattice for the calculation.