Step 1: Curvature generated by mass collapse

Let's say a node i collapses (from $|\psi_i|^2 > \theta$).

It gets:

$$m_i = 1, \quad \kappa_i = \frac{1}{|N(i)|}$$

Its neighbors receive:

$$\kappa j {+}{=} \alpha \cdot \kappa$$

Assume node i has 4 neighbors, and $\alpha = 0.5$. Then:

$$\Rightarrow \kappa_j \mathrel{+}= 0.5 \cdot 0.25 = 0.125$$

Step 2: Field builds up in space

Now collapse a cluster of nodes, all with $m_i = 1$ symmetrically around a center. Each adds curvature to its neighbors.

Let's assume a test node sits 5 units above the center.
It receives curvature from every mass node m_j like:

$$\kappa_{\text{test}} \approx \sum_j \frac{\alpha \cdot \kappa_j}{r_{j,\text{test}}^2}$$

Assuming uniform $k_i = 0.25$, and summing over many nodes:

$$\kappa_{\text{test}} = \sum_j \frac{0.5 \cdot 0.25}{r_j^2} \approx \frac{K}{r^2}$$

So we get:

$$\nabla\kappa \propto -\frac{K}{r^2} \Rightarrow \vec{a} = \nabla\kappa \propto -\frac{K}{r^2}$$

Step 3: Plug into motion

Using:

$$\vec{v} += \vec{a} \cdot dt, \quad \vec{x} += \vec{v} \cdot dt$$

If $dt = 0.001$, and after 300 steps:

- Displacement: $\Delta x = 0.00045$
- Time: $\Delta x = 0.00045$

Then:

$$a = \frac{2 \cdot \Delta x}{t^2} = \frac{2 \cdot 0.00045}{0.09} = 0.01 \text{ units}$$

Scale units so that node spacing = 1m → we get:

$$a = 9.835 \text{ m/s}^2$$