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The smallest grid needed to represent a geometric intersection graph

Spinrad [2003] asked for the smallest $k = k(n)$ such that every disk graph on n vertices can be represented by disks whose radii and coordinates of the centers are at most k in absolute value.

We will show that $k = 2^{2^{\Theta(n)}}$.

On the other hand any intersection graph of homothets/translates of a fixed polygon P can be represented on a $2^{\Theta(n)} \times 2^{\Theta(n)}$ -grid and this is sharp.