Abstract:

It is almost true that any two people in the US are connected by less than six steps from one friend to another. What are models for large graphs with such small diameters? Watts and Strogatz observed (in Nature, June 1998) that a few random edges in a graph could quickly reduce its diameter (longest distance between two nodes). We report on an analysis by Newman and Watts (using mathematics of physicists) to estimate the diameter with an $N$-cycle and $M$ random shortcuts, $1 << M << N$.

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