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We consider a family of self-similar graph Laplacians on the unit interval with fractal measure parameterized by a parameter  $p$ . Our parameter  $p$  is a transition probability for self-similar random walks, and also  $p$  is related to the contrast ratio of the fractal medium. A known theoretical result by Yin-Tat Lee [arXiv:1111.2938](https://arxiv.org/abs/1111.2938) shows that in our case the wave propagation speed is infinite. However, our simulations suggest that almost all of a smooth wave propagates with finite wave speed  $v$  and that  $v \sim 1/(2p)$  for  $0 < p < 1/2$ . (Received January 31, 2016)