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Sarah Constantin (sconstan@princeton.edu), 2829 Frist Campus Center, Princeton University, Princeton, NJ 08544, and **Miles Wheeler*** (mhw33@cornell.edu), 305 Cornell Street, Ithaca, NY 14850. *Spectral Operators on Vicsek Sets.*

Denglin Zhou has given an explicit description of spectral decimation for Laplacians on a class of fractals VS_n generalizing the Vicsek set VS_2 . (On the first level, VS_n consists of a central cell and four "arms" of $n-1$ cells). We have created algorithms to implement his description and used them to study the eigenfunctions of the Neumann Laplacian and spectral operators such as the heat kernel, wave propagator, and projections onto spaces spanned by different families of eigenfunctions. We have also obtained some theoretical results, such as the existence of gaps in the ratios of eigenvalues. We also explain how the spectrum of the Laplacian on VS_n converges as n approaches infinity to the spectrum of the Laplacian on two crossed lines (the limit of the sets VS_n). Joint work with Robert S. Strichartz. (Received August 08, 2008)