1118-37-197 **Antoni Brzoska***, Department of Mathematics, 196 Auditorium Road, Storrs, CT 06269-3009.
Spectral properties of the Hata Tree.

The Hata tree is the unique self-similar set in the complex plane determined by the contractions $f_1(z) = c\bar{z}$ and $f_2(z) = (1-|c|^2)\bar{z}+|c|^2$, where c is a complex number such that $|c|, |1-c| \in (0,1)$. There are three main results. First, by applying linear algebra and spectral theory, it is possible to construct a six dimensional dynamical system that can compute the eigenvalues of the probablistic Laplacian on certain graph approximations to the Hata tree called blow-ups. It is also possible to compute the spectrum of the probabilistic Neumann Laplacian on the limiting infinite lattice. Second, the Sabot theory can be applied to construct a two dimensional dynamical system to compute the eigenvalues of a class of normalized graph Laplacians (including the probabilistic Laplacian) on these blow-ups. Third, it is possible to reconstruct the Hata tree as the union of two copies of a mixed affine nested fractal indentified at a point. It is possible to state results on the spectral asymptotics of the eigenvalue counting function of a certain class of Laplacians (not including the probabilistic Laplacian) on this mixed affine nested fractal. (Received January 31, 2016)