1145-60-642   **Patricia Alonso-Ruiz*** (`patricia.alonso-ruiz@uconn.edu`), 341 Mansfield Road, U-1009, Storrs, CT 06269. *Heat kernels and functional inequalities on generalized diamond fractals.*

Generalized diamond fractals constitute a parametric family of spaces that arise as scaling limits of so-called diamond hierarchical lattices. The latter appear in the physics literature in the study of random polymers, Ising and Potts models among others. In the case of constant parameters, diamond fractals are self-similar sets. This property was exploited in earlier investigations by Hambly and Kumagai to study the corresponding diffusion process and its heat kernel. These questions are of interest in this setting in particular because the usual assumption of volume doubling is not satisfied. For general parameters, also the self-similarity is lost. Still, a diamond fractal can be regarded as an inverse limit of metric measure graphs and a canonical diffusion process obtained through a general procedure proposed by Barlow and Evans. This approach will allow us to provide a rather explicit expression of the associated heat kernel and deduce several of its properties. As an application, we will discuss some functional inequalities of interest. (Received September 12, 2018)

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