

Meeting: 1001, Evanston, Illinois, SS 12A, Special Session on Iterated Function Systems and Analysis on Fractals

1001-46-410 **B. M. Hambly** (hambly@maths.ox.ac.uk), Mathematical Institute, University of Oxford, 24-29 St. Giles', OX1 3LB Oxford, England, **V. Metz** (metz@mathematik.uni-bielefeld.de), Faculty of Mathematics, Bielefeld University, D-33501 Bielefeld, Germany, and **A. Teplyaev*** (teplyaev@math.uconn.edu), Department of Mathematics, University of Connecticut, Storrs, CT 06269. *Self-similar Dirichlet forms on p.c.f. fractals.*

A long standing question in the area of analysis on fractals was and still is the existence of a self-similar Dirichlet form, or energy for short, on a given self-similar set. So far the highly symmetric nested fractals were the only large class of finitely ramified fractals for which the existence and uniqueness of a self-similar Dirichlet form was established. We develop simple sufficient criteria to prove the existence and uniqueness of such a form on a post critically finite (p.c.f.) fractal. We provide a flexible reduction technique which allows to replace symmetry arguments partly or entirely by connectivity arguments. We also drop the usual requirement that any point of the boundary of the fractal is the fixed point of one of the defining contractions. Our work is a step toward proving the conjecture that any p.c.f. fractal has a self-similar Dirichlet form. (Received August 31, 2004)