1021-28-170 **Luke G Rogers*** (luke@math.cornell.edu), Department of Mathematics, Malott Hall, Cornell University, Ithaca, NY 14853-4201, **Robert S Strichartz** (str@math.cornell,edu), Department of Mathematics, Cornell University, Malott Hall, Ithaca, NY 14853-4201, and **Alexander Teplyaev** (teplyaev@math.uconn.edu), Department of Mathematics, University of Connecticut, Storrs, CT 06269-3009. *Smooth bumps and a Borel Theorem on P.C.F Fractals.*

Two methods for constructing smooth bump functions on fractals will be discussed. One is probabilistic and uses sub-Gaussian estimates for the heat operator, the other uses the analytic theory for p.c.f. fractals and a fixed point argument. From these we prove a Borel theorem for p.c.f. fractals, showing that to any prescribed jet at a junction point there is a smooth function with that jet. This result has useful consequences, for example we can prove that smooth functions may be decomposed subordinate to an open cover, yielding an analogue of classical partition of unity arguments that is valid in the fractal setting. (Received September 04, 2006)