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Department of Mathematics, Box 354350, Seattle, WA 98195-4350. *On planar self-similar sets with  
a dense set of rotations.*

We prove that if  $E$  is a planar self-similar set with similarity dimension  $d$  whose defining maps generate a dense set of rotations, then the  $d$ -dimensional Hausdorff measure of the orthogonal projection of  $E$  onto any line is zero. We also prove that the radial projection of  $E$  centered at any point in the plane also has zero  $d$ -dimensional Hausdorff measure. Then we consider a special subclass of these sets and give an upper bound for the Favard length of  $E(\rho)$  where  $E(\rho)$  denotes the  $\rho$ -neighborhood of the set  $E$ . (Received December 16, 2005)