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Department of Mathematics, University of Oklahoma, Norman, OK 73019-0315. *Orthogonal and Maximal Sets for Bernoulli Measures*. Preliminary report.

We consider orthogonal and maximal sets on  $L^2(X_\lambda, \mu_\lambda)$  where  $\mu_\lambda$  is the Hutchinson measure associated with the Bernoulli Iterated Function System (IFS) for  $\lambda \in (0, 1)$  and  $X_\lambda$  is the support of the measure. By previous theorems, we have an orthonormal basis of exponential frequencies for our space where  $\lambda = \frac{1}{2n}$ , which we denote  $\Gamma_{\frac{1}{2n}}$ . We investigate sets  $c\Gamma_{\frac{1}{2n}}$  where  $c$  is an odd integer dependent on  $2n$ . We prove that the set  $3\Gamma_{\frac{1}{4}} \cup \{x : x = -4^n(1 + \sum_{j=n+1}^p a_j 4^j), p < \infty, n \in \mathbb{N}_0, a_j \in \{0, 3\}\}$  is an orthogonal and maximal set for the space  $L^2(X_{\frac{1}{4}}, \mu_{\frac{1}{4}})$ , but is probably not an orthonormal basis for the set. (Received July 27, 2010)