1087-26-77 **Pieter C Allaart*** (allaart@unt.edu), Mathematics Department, 1155 Union Circle #311430, Denton, TX 76203-5017. *The Hausdorff dimension of level sets of generalized Takagi functions.* Preliminary report.

Takagi's continuous but nowhere differentiable function is defined by

$$T(x) = \sum_{n=0}^{\infty} \frac{1}{2^n} \phi(2^n x),$$

where $\phi(x)$ is the distance from x to the nearest integer. Recently there has been a great deal of interest in the level sets of T, which have been shown to possess many surprising properties. In particular it is now known that the maximal Hausdorff (and box-counting) dimension of the level sets of T is $1/2$. This talk concerns the dimension of level sets of the more general functions of the form

$$f(x) = \sum_{n=0}^{\infty} \frac{\omega_n(x)}{2^n} \phi(2^n x),$$

where each ω_n is a $\{-1, 1\}$-valued function which may jump only at points $k/2^n$, so that each term of the above series is a continuous function. For such functions, the dimension of the level sets can be considerably greater than $1/2$. A sharp upper bound for this dimension will be presented, but on the other hand, it will be shown that the original bound of $1/2$ remains valid in the special case when each ω_n is constant. If time permits, the case when the sign functions ω_n are chosen at random will also be discussed. (Received November 27, 2012)