1068-28-175 **De-Jun Feng*** (djfeng@math.cuhk.edu.hk), Department of Mathematics, The Chinese University of Hong Kong, Hong Kong. *Multifractal analysis of Bernoulli convolutions associated with Salem numbers.*

We consider the multifractal structure of the Bernoulli convolution ν_λ, where λ^{-1} is a Salem number in $(1,2)$. Let $\tau(q)$ denote the L^q spectrum of ν_λ. We show that if $\alpha \in [\tau'(+\infty), \tau'(0+)]$, then the level set

$$E(\alpha) := \left\{ x \in \mathbb{R} : \lim_{r \to 0} \frac{\log \nu_\lambda([x-r, x+r])}{\log r} = \alpha \right\}$$

is non-empty and $\dim_H E(\alpha) = \tau^*(\alpha)$, where τ^* denotes the Legendre transform of τ. This result extends to all self-conformal measures satisfying the asymptotically weak separation condition. We point out that the interval $[\tau'(+\infty), \tau'(0+)]$ is not a singleton when λ^{-1} is the largest real root of the polynomial $x^n - x^{n-1} - \cdots - x + 1$, $n \geq 4$. We also construct an example of absolutely continuous self-similar measure μ on $\mathbb{R}$ which has a nontrival multifractal structure. (Received January 18, 2011)