ELEC 697: Homework Dec 3, 1998

1. Calculate the partition function $\tau(q)$ for the Binomial measure. Recall that

$$\tau(q) = \lim_{n\to\infty} -\frac{1}{n} \log_2 \sum_{k=0}^{2^n-1} |\Delta_k^n Y|^q .$$

   Use the expression of $\Delta_{k_n}^n Y$ as a product $m_{k'_1} \cdot \ldots \cdot m_{k'_n}$ and the formula for binomial expressions to obtain a simle formula.

2. Verify, that the Legendre transform $\tau^*(\alpha)$ of this $\tau(q)$ is identical with the spectrum $f_h(\alpha)$ for the binomial.

3. Using similar ideas, i.e. the binomial expansion, show that the wavelet coefficients of the binomial do not form an l^2-sequence.

For hints email riedi@rice.edu .