ESTIMATES OF THE RENEWAL MEASURE

Let μ be a nonlattice probability measure on the line, and $\nu = \sum_0^\infty \mu^{n*}$ its renewal measure. Blackwell's renewal theorem states that

$$\lim_{x\to+\infty} \nu(x+I) = \frac{|I|}{\mu_1} ,$$

where $\mu_1 = \int x d\mu(x)$ is the first moment of μ and $|I|$ the length of the interval I.

A lot of papers have studied the rate of this convergence. My talk is yet another attempt in this quest. In particular I am interested in the case were μ has finite moments of order α (i.e. $\int |x|^\alpha d\mu(x) < \infty$) when $1 < \alpha < 2$.

The methods are Fourier analytic.