

# 北京师范大学 随机数学研究中心

## 学术报告

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题目: Iteration of Mandelbrot cascades

时间: 2023 年 4 月 28 日 (周五) 下午 2: 30-4: 00

地点: 后主楼 1220

摘要: Let  $b$  be an integer ( $b \geq 2$ ) and  $W$  a non-negative random variable of expectation 1. Let  $(W_{i_1, i_2, \dots, i_n})$  be variables, indexed by finite sequence  $i_1, i_2, \dots, i_n$  of elements of  $\{1, 2, \dots, b\}$ , equidistributed with  $W$ , and independent. Set

$$Y_n := b^{-n} \sum_{i_1, i_2, \dots, i_n} W_{i_1} W_{i_1, i_2} \cdots W_{i_1, i_2, \dots, i_n}.$$

This is a positive martingale converges towards some r.v.  $Y$ . It is uniformly integrable if and only if  $\mathbf{E}[W \log W] < \log b$ . (J.-P. Kahane and J. Peyrière 1976).

The Mandelbrot construction provides a mapping  $\Phi$ : the probability law of  $W$  is sent to the probability law of  $Y$ . Starting from a convenient  $W_0$  is possible to iterate  $\Phi$ . This gives rise to a Central Limit Theorem and a functional CLT (J. Barral, J. Peyrière, and Z.-Y. Wen, circa 2010).