



复旦大学数学科学学院 数学综合报告会

报告题目: Fixed points of the smoothing transform: classical results and recent developments

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时间: 2026-09-16 星期三 10:00-11:00

地点: 光华楼东主楼1801

报告摘要:

Abstract: Subject of my talk are smoothing equations of the form

$$\mathcal{L}(X) = \mathcal{L}\left(\sum_{j=1}^N T_j X_j + C\right)$$

where $\mathcal{L}(Y)$ denotes the law of a random variable Y , and N is a random nonnegative integer. Solutions to the above smoothing equation, also known as the fixed-point equation of the smoothing transformation, arise as limiting distributions of various quantities of interest in models from applied probability and statistical physics. I will survey classical results on this equation in dimension $d = 1$, first for nonnegative random variables and then for real-valued random variables. I will subsequently turn to results in various multivariate settings, possibly, if time permits, touching ongoing work on the case in which $X, X_1, X_2, \dots$ are independent and identically distributed d -dimensional random vectors, C is a given d -dimensional random vector, and $T_1, T_2, \dots, T_N$ are given random elements of the general linear group of degree d .

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