Large s-selfdecomposable and selfdecomposable probability distributions

Zbigniew Jurek

Institute of Mathematics, University of Wroclaw

Let E be a Banach space, $T_a x := ax, x \in E, a > 0$ (linear) and $U_r(x) := \max(\|x\| - r, 0)\, x/\|x\|, x \in E, r > 0$ (non-linear) be two families of transformations on E. For independent E-valued variables ξ_i's and $a_n > 0$, $r_n > 0$ and $x_n \in E$, let us define sequences

$$T_{a_n}(\xi_1) + T_{a_n}(\xi_2) + \cdots + T_{a_n}(\xi_n) + x_n = T_{a_n}(\xi_1 + \xi_2 + \cdots + \xi_n) + x_n \qquad (1)$$

and

$$U_{r_n}(\xi_1) + U_{r_n}(\xi_2) + ... + U_{r_n}(\xi_n) + x_n. \qquad (2)$$

Suppose that the summands in (1) and (2) form *infinitesimal* triangular arrays. Weak limits in (1) are called *selfdecomposable* probability distributions (or Lévy class L distribution). The class L is a natural generalization of the stable distributions. Similarly weak limits in (2) are called *s-selfdecomposable* probability distributions (or class $\mathcal{U}$ distributions).

In the lecture we will investigate relations between these two, seemingly unrelated, classes of probability measures.

References

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