RÉSUMÉS
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I. Y. Davydov, S.Y. Liu, *Transformations des lois multivariées avec queues régulières.* Soit X un vecteur aléatoire dans $\mathbb{R}^d$ à queue à variation régulière. On considère deux transformations $\|X\|f(\frac{X}{\|X\|})$, $f : S^{d-1} \to S^{d-1}$, et $Xf(\frac{X}{\|X\|})$, $f : S^{d-1} \to \mathbb{R}_+$. Nous donnons des conditions suffisantes pour que la propriété de régularité de la queue soit préservée sous les transformations de ce type.

II. M. Huttner, *Monodromy, hypergeometric polynomials and diophantine approximations.* The monodromy's study of Fuchsian hypergeometric differential equation provides a natural framework for the explicit determination of rational approximations of polylogarithmic and hypergeometric functions. Thus, we can obtain almost without calculation explicit determination of many polynomials and hypergeometric power series related to their Padé approximations. From now on, using a classical way, one can study the arithmetic nature of numbers related to the values taken by these functions.

III. F. Achemine, D. Hamadouche, *Lamperti's invariance principle for weak dependent sequences.* We consider Lamperti's invariance principle for random variables satisfying Doukhan-Louhichi dependence condition. With some moment inequalities, we obtain a version of Lamperti's invariance principle for the polygonal interpolation of the partial sums process. Similar results are proved for the convolution smoothing of partial sums process.

IV. M. Belliart, *Actions localement libres rigides de groupes de Lie nilpotents.*

V. A. Račkauskas, Ch. Suquet, *On limit theorems for Banach space valued linear processes.* Let $(\epsilon_i)_{i\in\mathbb{Z}}$ be i.i.d. random elements in the separable Banach space $\mathbb{E}$ and $(a_i)_{i\in\mathbb{Z}}$ be continuous linear operators from $\mathbb{E}$ to the Banach space $\mathbb{F}$, such that $\sum_{i\in\mathbb{Z}} \|a_i\|$ is finite. We prove that the linear process $(X_n)_{n\in\mathbb{Z}}$ defined by $X_n := \sum_{i\in\mathbb{Z}} a_i(\epsilon_{n-i})$ inherits from $(\epsilon_i)_{i\in\mathbb{Z}}$ the central limit theorem as well as functional central limit theorems in various Banach spaces of $\mathbb{F}$ valued functions, including Hölder spaces.

VI. R. Lachièze-Rey, *Strong mixing property for STIT tessellations.* The so-called STIT tessellations form the class of homogeneous (spatially stationary) tessellations of $\mathbb{R}^d$ which are stable under the nesting/iteration operation. In this paper, we establish the strong mixing property for these tessellations and give the optimal form of the rate of decay of $|\mathbb{P}(A \cap Y = \emptyset, T_h B \cap Y = \emptyset) - \mathbb{P}(A \cap Y = \emptyset)\mathbb{P}(B \cap Y = \emptyset)|$ when A and B are two compact sets, h a vector of $\mathbb{R}^d$, T_h the corresponding translation operator and Y a STIT Tessellation.

VII. S. Arlot, A. Celisse, *A survey of cross-validation procedures for model selection.* Used to estimate the risk of an estimator or to perform model selec-

tion, cross-validation is a widespread strategy because of its simplicity and its apparent universality. Many results exist on the model selection performances of cross-validation procedures. This survey intends to relate these results to the most recent advances of model selection theory, with a particular emphasis on distinguishing empirical statements from rigorous theoretical results. As a conclusion, guidelines are provided for choosing the best cross-validation procedure according to the particular features of the problem in hand.

VIII. R. S. Stoica, S. Liu, Yu. Davydov, M. Fouchard, A. Vienne, G. B. Valsecchi, *Order statistics and heavy-tail distributions for planetary perturbations on Oort cloud comets.* This paper tackles important aspects of comets dynamics from a statistical point of view. Existing methodology uses numerical integration for computing planetary perturbations for simulating such dynamics. This operation is highly computational. It is reasonable to wonder whenever statistical simulation of the perturbations can be much more easy to handle. The first step for answering such a question is to provide a statistical study of these perturbations in order to catch their main features. The statistical tools used are order statistics and heavy tail distributions. The study carried out indicated a general pattern exhibited by the perturbations around the orbits of the important planet. These characteristics were validated through statistical testing and a theoretical study based on Öpik theory.

IX. R. S. Stoica, V. J. Martínez, *Filaments in observed and mock galaxy catalogues.* The main feature of the spatial large-scale galaxy distribution is an intricate network of galaxy filaments. The present paper compares the filaments in the real data and in the numerical models, to see if our best models reproduce statistically the filamentary network of galaxies.

X. M. Fradon, *Brownian Dynamics of Globules.* We prove the existence and uniqueness of a strong solution of a stochastic differential equation with normal reflection representing the random motion of finitely many globules. Each globule is a sphere with time-dependent random radius and a center moving according to a diffusion process. The spheres are hard, hence non-intersecting, which induces in the equation a reflection term with a local (collision-) time. A smooth interaction is considered too and, in the particular case of a gradient system, the reversible measure of the dynamics is given. In the proofs, we analyze geometrical properties of the boundary of the set in which the process takes its values, in particular the so-called Uniform Exterior Sphere and Uniform Normal Cone properties. These techniques extend to other hard core models of objects with a time-dependent random characteristic: we present here an application to the random motion of a chain-like molecule.