**STATISTICS and PROBABILITY GROUP**

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**Head** – Prof. Habil. Dr. Kęstutis Kubilius

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**Emerites:**

Professor Emeritus Mifodijus Sapagovas

**Doctoral students:**

Aidas Medžiūnas

Rūta Užupytė

***RESEARCH INTERESTS:*** statistical inference for long memory processes, statistical hypothesis testing***,*** heavy tails, self-similar processes, rough paths, econometrics, biostatistics, finite population statistics and statistical analysis of data, extremal problems in harmonic analysis, random graphs, combinatorics, discrete mathematics, algebraic geometry.

**RESEARCH PROJECTS CARRIED OUT IN 2018**

**Projects Supported by University Budget**

**Analysis and application of of probabilistic models and the study of asymptotic properties**. Prof. Habil. Dr. K. Kubilius. 2017–2019.

Optimal Littlewood – Offord type inequality for arbitrary multidimensional distributions is obtained.

Strong consitency and asymptotic noramal estimator of solutions of SDE with non-Lipschitz diffusion coefficient driven by a fractional Brownian motion is obtained. It is proved that the Hurst estimator preserves its properties, if we replace the solution with its backward Euler approximation.

A method for estimating the approximation error using the maximum norm for the convergence of a finite-difference scheme of a two-dimensional nonlinear elliptic equation in a rectangular region with an integral boundary condition is proposed.

Main publications:

1. **Juškevičius, Tomas**; Šemetulskis, Gražvydas. Optimal Littlewood-Offord inequalities in groups // Combinatorica. Heidelberg : Springer Heidelberg. ISSN 0209-9683. eISSN 1439-6912. 2019, vol. 39, iss. 4, p. 911-921. DOI: 10.1007/s00493-018-3845-7.
2. **Sapagovas, Mifodijus**; Štikonienė, Olga; Jakubėlienė, Kristina; Čiupaila, Regimantas. Finite difference method for boundary value problem for nonlinear elliptic equation with nonlocal conditions // Boundary value problems. London : Springer Open. ISSN 1687-2762. eISSN 1687-2770. 2019, vol. 2019, iss. 1, art. no. 94, p. 39-62. DOI: 10.1186/s13661-019-1202-4

**National Research Projects**

Research Council of Lithuania. **A visit to the Lithuanian Institute of Science and Studies to raise the competence of scientists** (No. 09.3.3-LMT-K-712-12-0007) Prof. Habil. Dr. K. Kubilius. 2019-10-3 – 2019-10-26

The aim of the project is to improve the competence of VU Mathematics and Informatics scientists together with Ukrainian scientist prof. habil. dr. Yuliya Mishura in the study "Fractional stochastic processes with short and long memory and their applications.

Research Council of Lithuania. **Optimal inequalities for concentration function, entropy, and number of random polynomial roots** ( No. 09.3.3-LMT-K-712-02-0151) dr. Tomas Juškevičius. 2017-12-04 – 2019-12-03

The aim of the project was to evaluate the Levy concentration function for the measure of the coupling coefficients, the Shannon and differential entropy estimators for random variables, and the estimation of the number of roots of random trigonometric polynomials.

***OTHER SCIENTIFIC ACTIVITIES***

**Prof. K. Kubilius –**

* co-editor-in-chief of the *Modern Stochastics: Theory and Applications*, <https://www.i-journals.org/vtxpp/VMSTA/> ;
* editorial board member of the *Lithuanian Mathematical Journal*, <http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard>;
* editorial board member of the *Mathematical Modelling and Analysis*,  [http://inga.vgtu.lt/~mma/](http://inga.vgtu.lt/~mma/%20) .

**Prof. S. Norvidas –**

* editorial board member of the *Lithuanian Mathematical Journal*, [http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard](http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard%20).

**Doc. M. Radavičius –**

* editorial board member of the *Lithuanian Mathematical Journal*, http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard;
* editorial board member of the *Modern Stochastics: Theory and Applications*,<https://www.i-journals.org/vtxpp/VMSTA/>**;**
* editorial board member of the journal *Lietuvos statistikos darbai* (Lithuanian Journal of *Statistics*), <https://www.journals.vu.lt/statisticsjournal>.

**Prof. R. Rudzkis –**

* editorial board member of the *Lithuanian Mathematical Journal*, http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard;
* editorial board member of the journal *Прикладная эконометрика,*

<http://www.appliedeconometrics.ru/r/board/>;

* editorial board member of the journal *Lietuvos statistikos darbai* (Lithuanian Journal of *Statistics*), <https://www.journals.vu.lt/statisticsjournal>;
* editorial board member of the journal *Pinigų studijos* (*Monetary Studies*), http://www.lb.lt/pinigu\_studijos\_redkolegija.

**Prof. Emeritus M. Sapagovas –**

* editorial board member of the *Lithuanian Mathematical Journal,* http://www.springer.com/mathematics/journal/10986?detailsPage=editorialBoard;
* editorial board member of  the journal *Nonlinear Analysis: Modelling and Control,* [*https://www.mii.lt/NA/*](https://www.mii.lt/NA/)*;*
* editorial board member of  the journal *Informatica,* <https://www.mii.lt/Informatica/>;
* editorial board member of the *Mathematical Modelling and Analysis*,  [http://inga.vgtu.lt/~mma/](http://inga.vgtu.lt/~mma/%20) .