

INTERNATIONAL BIWEEKLY ONLINE SEMINAR ON ANALYSIS, DIFFERENTIAL EQUATIONS AND MATHEMATICAL PHYSICS

Coordinators: Prof. Alexey Karapetyants, Prof. Vladislav Kravchenko

[JOIN THE SEMINAR](#)

10 November 2022, 6 pm (UTC+3)

Do biological species exist as mathematical solutions?

Vitalii Vol'pert, Institut Camille Jordan, France, and
Nicol'skii Mathematical Institute of Peoples' Friendship University, Russia

volpert@math.univ-lyon1.fr

According to Darwin, biological species can be characterized as groups of individuals with similar morphological characteristics. If we consider humans and take only one such characteristics, for example, their height, then the population can be described by the normal distribution. Such distributions considered for any biological species and their morphological parameters are relatively stable and can be considered as stationary in appropriate time scale. Therefore, we can formulate the question whether population distributions can be described as stable stationary solutions of some relevant models. However, it appears that conventional population models do not have such solutions. In this lecture, we will derive a model for a population distribution with respect to the genotype (and not phenotype, i.e., morphology). We will study the existence and stability of solutions of this equation, in particular, of normal distributions. We will conclude with some biological interpretations including the relation between the genotype and the phenotype.

Joint work with B. Peña and S. Trofimchuk.

*Seminar website: <https://msrn.sfedu.ru/sl>. The seminar uses Microsoft Teams online platform. Please send questions to ademp.seminar@gmail.com (Tatiana Andreeva, scientific secretary).

The seminar is organized by the coordinators Alexey Karapetyants and Vladislav Kravchenko within the activities of the Regional Mathematical Center of the Southern Federal University in collaboration with Institute of Mathematics, Mechanics and Computer Sciences of the Southern Federal University and the OTHA research group in Operator Theory and Harmonic Analysis.

**Региональный научно -
образовательный
математический центр**
Южный Федеральный Университет
Ростов-на-Дону

Regional Mathematical Center
<https://rmc.sfedu.ru/>



**Institute of Mathematics, Mechanics
and Computer Sciences**
<http://www.mmcs.sfedu.ru/>



**OTHA research network in
Operator Theory and Harmonic Analysis**
<http://msrn.sfedu.ru/>