

Mykola Staryi

Curriculum Vitae

PERSONAL DETAILS

Birth 05/07/2000
Address 01024 Ukraine, Kyiv-4, Tereshchinkivska str. 3
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EDUCATION

BSc. Quantum computers, calculations and information

2018 – 2022

Taras Shevchenko National University of Kyiv

A diploma with honor, bachelor's thesis topic: the use of group theoretical methods to study the order parameter of multiphysics.

MSc. Theoretical and Mathematical physics

2022 – 2024

Kyiv Academic University, Full-time

The main goal of my work was to calculate correlation functions using methods based on the Riemann-Hilbert approach. Our efforts were focused on a calculation of the correlation functions of Heisenberg XXO model in the asymptotic limit, where the representation in the form of the Fredholm determinant $\det(1 + W)$ is acceptable

PhD, Mathematics

2024 - till now

Institute of Mathematics of NAS of Kyiv, Ukraine, Full-time

In my studies I want to consider the relations between realization (i.e the representations of Lie algebras in a form of 1-st order differential operators) and matrix representations. The method I'm planning to use also enables to classify some algebras, which can be obtained from simple Lie algebras by contractions.

WORK EXPERIENCE

A head of the school astronomy club

2021 - till now

Gymnasium 59 in Kyiv, Part-time

The purpose of my work is to conduct additional classes on astronomy for schoolchildren, including a discussion of astronomy-related issues. I also help children to write research papers at the Minor Academy of Sciences. The main emphasis in this work is on finding a new approach that allows one to take a non-trivial look at known things, which, in my humble opinion, contributes to the popularization of science.

TOPICS OF REPORTS

Applications of theoretical group methods to describe the evolution of the parameter of multiferroics

03.11.2022

Student seminar of the Department of Theoretical and Mathematical Physics at KAU

Particular solutions of the system of dynamic equations for a free multiferroic film were found. Using these solutions, the dependence of the free energy of the film on its thickness and boundary conditions was analyzed.

Gauge theories and integrable systems

17.03.2023

Student seminar of the Department of theoretical and mathematical physics at KAU

Structures such as differential forms, bundles, and connections are now used in various areas of mathematics and physics. Since this area is rather abstract, we try to start with the simplest example - the electromagnetic field, which allows us to get acquainted with the above concepts.

On modern applications of Lie algebras (Poster)

24-26.09.2024

Bogolyubov Kyiv Conference, "Problems of Theoretical and mathematical physics"

This work reviews modern applications of Lie algebras, such as limiting transitions between different models, new classes of orthogonal special functions, and the construction of quasicrystals using root systems. We also provide a list of mathematical areas which Lie algebras theory has had a profound impact.

COURSES

Lie algebras and its applications

Fall 2022

M. Nesterenko

General Topology

Spring 2023

B. Feshchenko

QFT

Fall 2022 – Spring 2023

V. Gusynin

CFT

Spring 2023

N. Iorgov

Categories

Spring 2024

B. Feshchenko

ADHM model, instantons in gauge theories and integrable systems

Fall 2023

O. Gamayun,
P. Gavrylenko,
N. Grigoryev,
Y. Zhuravliov

Representation theory

Fall 2024

E. Chapovskiy
S. Koval

I also attended classes that were held at the summer school-conference on number theory "Numbers in the Universe" (2023) and the summer school, dedicated to operator algebras, quantum groups and quantum information theory in Babyn Village (2024).

SKILLS

<i>Languages</i>	Ukrainian, Russian (mother tongues) English B2 German A2
<i>Software</i>	MATLAB, L ^A T _E X, COMSOL

REFERENCES

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