

**Nikolaj Nikolaevich**  
**BOGOLJUBOV** as  
**RESEARCHER** and **TEACHER**

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**Bogoliubov**

**1909 – 1992**



Nikolaj Nikolaevich  
Bogoliubov started  
science at his 15.

In 1930 (photo) he  
got the Doctor degree  
(about 20 papers)

I worked with him since 1948 ...

## Early impression, FizFak MSU 1947

My first impression dates back to the spring of 1947 when N.N. red a course of lectures on "Dynamic eqs of statistical physics".

Rather short, in an elegant grey suit and a bow tie, portly and in his prime, lively and buoyant, he enthusiastically lectured following in general his book (under the same title) that had been just published.

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Since end of 1948, I worked with NN in Inst. for Chemical Phys (=IChPh) on Soviet Atomic Project.

## End of 40s. In ChemPhys Institute

NN asked me simplify kinetic transport neutron diffusion and slowing-down) Boltzmann equation. To get accurate analytic results in support of numerical. Remarkably, he formulated problem for student without making even a hint at any lines of attack.

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Its successive solution gave me a good impetus for the scientific self-standing, was my "training solo flight" example. Typical for NN, the teacher.

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JETPh, Phys-Rev papers

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In his 40, NN was cheerful and actively amicable man.  
He liked to enjoy life and share joy with others.

After Seminar NN led all the company to  
“Ararat” shop for glass of Cognac+lemon;  
NN coming to Moscow and departure marked by  
party in restaurant - for his science family.



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This led to change in the life-values scale – intellectual activity not moved to 1st place, it took top priority.

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His wise, calm, and somewhat ironical attitude towards life was based on stable invariants formed in his youth.

NN never spoke about religion, but his moral rules, conveyed to the students in some hidden ways, complied with the Christian commandments.

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It looked as he had no hobbies. Instead, to relax, NN changed subject of research, as was able (like Julius Ceasar) to work on several distant problems in parallel.

Look at his mid-50s, ...

## Features of Bogoliubov's creativity, 50s; 55 - 56 !!

1. Tomonaga-Schwinger eq. for  $S(g)$  (4) 1950-1952
2. Plasma in magnetic field (8) 1951-1952
3. Functional integral representation (1) 1954
4. Causality condition for  $S(g)$ -matrix (3) 1955-1956
5. Multiplication of singular functions, R operation (5) 1955-57
6. Renormalization group (4) 1955-1956
7. Physical Dispersion Relations (3) 1956-1957
8. Rigorous proof of Disp Relations (7) 1956-1958
9. Superconductivity for Frohlich model (4) 1957-1958
10. Model Hamiltonians and pair correlation (4) 1959-1960
11. Indefinite metric in QFT (2) 1958
12. Quasi-averages (3) 1959-1961



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- For 10-12 years :
- about 50 papers
- + 5 monographs
- + creation Chair at Lomonosov University
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Creative style – "Veni, vidi, vici" .

He addressed the problem, exhaustively solved it, and switched to another issue.

. Cf., e.g., with Heisenberg and Landau.

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\*\* 2nd element = involvement of a young colleague  
into a large activity such as joint work on a book.

\*\*\* 3rd method of cultivating self-dependence →

accelerated training of the young co-author in the art  
of reporting on joint research –

“To put on the wing without delay”

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— *NN's Scientific “Codex of Honour”* : —

- \* Minimal co-authorship,
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NN was interested in personal qualities of young people around him. He valued the congenial human environment, the moral climate among his co-workers.

... Cases of ostracism.



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The Bogoliubov moral heritage became apparent in complicated post-Soviet period.

Unlike many prominent Soviet scientists, the Bogoliubov followers served and will continue serving their Motherland.