

# Vyacheslav FEDOROV

## PERSONAL DATA

---

PLACE AND DATE OF BIRTH: Novosibirsk, Russia | 28 April 1998  
ADDRESS: Uchenicheskaya str. 2A — 171, 630068, Novosibirsk, Russia  
PHONE: +7 960 7924340  
MARITAL STATUS: Married with two children  
NATIONALITY: Russian  
EMAIL: [fuodorov1998@gmail.com](mailto:fuodorov1998@gmail.com)  
WEBSITE: [fuodorov.github.io](https://fuodorov.github.io)

## SUMMARY OF QUALIFICATION

---

I began to practice general astrophysics and radio astronomy at the Pushchino Radio Astronomy Observatory in the summer of 2015. In the fall of 2015, I entered the M.A. Lavrentiev physics and mathematics school at Novosibirsk State University (NSU). In 2017, I practiced at the Vega educational automated astrophysical complex at NSU as a student at NSU. At the invitation of the fall of 2017, I began to work as a laboratory assistant in the atmospheric research department of NSU in the space experiment laboratory, where I investigated the possibility of creating an IR horizon sensor for an ultra-small spacecraft and at the same time practiced teamwork and programming in Python and C++.

Since the fall of 2018, I have been practicing the Budker Institute of Nuclear Physics (BINP). I am engaged in the transportation of a high-current electron beam in a linear induction accelerator LIA-20. I work closely with the ASTRA and WARP PIC-codes, with the SAM program, and also develop the Python library [KENV](#) and [REDPIC](#). I studied the Python syntax in depth and was interested in machine learning.

Since 2020 I have been studying at ITMO University in the field of Optoelectronic devices and systems. I wrote a review article on "Diagnostics of charged particle beams in accelerators by means of optoelectronic systems". Unfortunately due to family reasons I had to stop my studies at ITMO University.

Since Spring 2021, I have been working as a Python Backend Developer at Sibers outsourced company in the Java department. Internally training in Python (Django), JavaScript (React), Java (Spring), PostgreSQL, LiquiBase, Kafka, Celery, Redis, RabbitMQ. Developed a web application for American doctors for recognition (Python) and CPT code assignment (Django and React).

## WORK EXPERIENCE

---

CURRENT APR 2021	Software engineer in SIBERS, Novosibirsk <i>Backend development for web applications</i> Internally training in Python (Django), JavaScript (React), Java (Spring), PostgreSQL, LiquiBase, Kafka, Celery, Redis, RabbitMQ. Developed a web application for American doctors for recognition (Python) and CPT code assignment (Django and React).
JAN 2021 SEP 2018	Laboratory assistant in BINP, Novosibirsk <i>Transportation of a high-current electron beam in LIA-20</i> The article "Transportation of a high-current electron beam in a linear induction accelerator LIA-5" is written. Released KENV Python library. Learned to work with PIC-codes ASTRA and WARP. We are developing our own PIC-code in Python. Improved programming skills in Python, in particular, I chose Jupiter Notebooks for scientific tasks. I gain knowledge of the beam dynamics in the accelerators.
SEP 2018 SEP 2017	Laboratory assistant in NSU, Novosibirsk <i>Creating an IR horizon sensor for an ultra-small spacecraft</i> A report is presented on the possibility of creating an IR horizon sensor for an ultra-small spacecraft, in particular, a sample of an IR horizon sensor and a test bench are made, test software for an IR sensor is written, and successful tests have been carried out on a test bench. Learned to work in a development team with Git, acquired programming skills in Python and C++. Gained knowledge about orientation systems and radiation protection of spacecraft.

## COMPUTER SKILLS

---

Basic Knowledge:	HTML, CSS, LINUX
Intermediate Knowledge:	C, C++, Java, JS, PostgreSQL, Mathcad, Compas-3D, AutoCAD
Advanced Knowledge:	Python, MATLAB, GitHub, $\text{\LaTeX}$ , ASTRA, WARP, SAM

## LANGUAGES

---

RUSSIAN:	Mother tongue
ENGLISH:	Intermediate Knowledge
GERMAN:	Intermediate Knowledge

## PAPERS

---

- DECEMBER 2021 V. Fedorov and A. Charchenko, **"Python Async API"**  
Seminar in Sibers [| Publication](#)
- NOVEMBER 2021 D. Nikiforov et al., **"Investigation of high current electron beam dynamics in linear induction accelerator for creation of a high-power THz radiation source"**  
Journal of Instrumentation [| Publication](#)
- APRIL 2021 V. Fedorov and A. Chertov, **"Diagnostics of charged particle beams in accelerators by means of optoelectronic systems"**  
Labwork in ITMO [| Publication](#)
- MARCH 2020 D. Nikiforov, M. Blinov, V. Fedorov, A. Petrenko et al., **"Transportation of a high-current electron beam in a linear induction accelerator LIA-5"**  
Particles and Nuclei [| Publication](#)
- JUNE 2018 V. Fedorov and M. Zadorozhny, **"Study of the possibility of creating a horizon sensor for the orientation system small spacecraft based on IR temperature sensor"**  
Labwork in NSU [| Publication](#)
- DEC 2017 V. Fedorov and A. Yatsky, **"Experimental study of high-frequency ignition parameters glow discharge"**  
Labwork in NSU [| Publication](#)
- DEC 2016 V. Fedorov, O. Bragin, L. Prokopyeva, **"Statistical processing of measurement results"**  
Labwork in NSU [| Publication](#)

## QUALIFICATIONS

---

- SPRING 2019 Driving license (category B), **driving school "Lights"**, Novosibirsk
- SPRING 2017 German language courses (A2), **Goethe Institut**, Novosibirsk
- SUMMER 2016 German language courses (A1), **Goethe Institut**, Novosibirsk
- SPRING 2016 All-Russian Olympiad in Astronomy, **MSU**, Saransk
- SPRING 2012 SAMBO Mayor Cup, **sports school "Source"**, Novosibirsk

## EDUCATION

---

CURRENT	School of Data Analysis, <b>Yandex</b> , Moscow
NOV 2020	Thesis: "Python Dev   Middle Python Dev   Algorithms"
SEP 2021	Engineer student, <b>ITMO University</b> , St. Petersburg
SEP 2020	Progress: 2/5 course   Major: Opto-electronic devices and systems Thesis: "Diagnostics of charged particle beams in accelerators by means of optoelectronic systems"   Advisor: Alexandr CHERTOV GPA: 4.93/5 <a href="#">  Detailed List of Exams</a>
AUGUST 2020	Terascale Summer School, <b>Deutsches Elektronen-Synchrotron</b> , Hamburg Thesis: "Particle- and astro-particle physics"   Advisor: Olaf BEHNKE
JULY 2020	Physics student, <b>Novosibirsk State University</b> , Novosibirsk
SEP 2016	Progress: 3/4 course   Major: Physics of accelerators Thesis: "Transportation of a high-current electron beam in a linear induction accelerator LIA-20"   Advisor: Danila NIKIFOROV GPA: 4.84/5 <a href="#">  Detailed List of Exams</a>
JULY 2016	General high school education, <b>M.A. Lavrentiev physics and mathematics school at Novosibirsk State University</b> , Novosibirsk
SEP 2015	GPA: 4.91/5 <a href="#">  Detailed List of Exams</a>
AUGUST 2015	Summer physics and mathematics school in <b>M.A. Lavrentiev physics and mathematics school at Novosibirsk State University</b> , Novosibirsk Thesis: "Olympiads mathematics and physics" Advisor: Mikhail AFANASYEV <a href="#">  Certificate</a>
JUNE 2015	Summer school of young astrophysicist in <b>Pushchino Radio Astronomy Observatory</b> , Pushchino Thesis: "Theoretical and observational astrophysics" Advisor: Vladimir SAMODUROV <a href="#">  Certificate</a>
SPRING 2015	School of communication skills of center " <b>Spring</b> ", Novosibirsk Thesis: "Secrets of effective communication" Advisor: Catherine BELOUSOVA <a href="#">  Certificate</a>
MAY 2015	Distance education center of <b>Lomonosov Moscow State University</b>
SEP 2014	Thesis: "The basics of astronomy in tasks" Advisor: Natalya SHATOVSKAYA <a href="#">  Certificate</a>

## SEVERAL FACTS ABOUT ME

---

I am interested in beam dynamics in linear accelerators and astrophysics.

I prefer Python to other programming languages.

I have experience in public speaking (up to 50 spectators).

I have a rank in chess and Russian wrestling SAMBO.

My favorite book is Anna Karenina by Tolstoy.

I like the series of books by "Uncle Bob" (Robert Martin).

## REFERENCES

---

FEB 2020

Dr. Alexey Petrenko, **BINP**, Novosibirsk

*I know Vyacheslav Fedorov as a well-qualified physicist...*

I know Vyacheslav for about one year since we started working on simulations of intense space charge dominated beams at Budker INP. Vyacheslav Fedorov's work is focused on the theoretical part of our project, namely the development of a fast beam envelope code and its benchmarking against more detailed Particle-in-Cell codes (like WARP and ASTRA) as well as experimental data. This work was very successful and over less than a year Vyacheslav was able to develop an analytical and numerical framework implemented as a modern Python library: [kenv](#). This code proved to be a very useful tool in the design and operations of several high-current accelerators.

[| Read completely](#)

JAN 2020

Dr. Pavel Logatchov, **BINP**, Novosibirsk

*While working in BINP Vyacheslav showed himself as a promising young specialist and researcher...*

With his active participation, a code based on the solution of the Kapchinsky-Vladimirsky system of equations was developed. Now this code is actively used to tune a high-current linear accelerator in BINP. In addition, he have high programming skills on Python. The last task that he solved on Python was to use a genetic algorithm for unfolding electron beam parameters using spot size measurement from solenoid scan.

[| Read completely](#)

# Certificate of ITMO UNIVERSITY

Student: Fedorov Vyacheslav Vasilievich

NAME OF SUBJECT	ACADEMIC HRS.	GRADE
I. SEMESTER		
Physics	144	Excellent
History of Western European and Russian Culture	108	Excellent
Mathematical Analysis	108	Good
Linear Algebra	108	Excellent
English	108	Passed
Philosophy	108	Good
Introduction to Digital Culture	108	Passed
Computer and Engineering Graphics	108	Good
Physical Chemistry	108	Excellent
Physical Education	16	Passed
II. SEMESTER		
Physics	144	Excellent
Mathematical Analysis	108	Good
Linear Algebra	108	Excellent
English	88	Passed
Data storage and processing	108	Passed
Introduction to Professional Practice	216	Excellent
Physical Education	16	Passed
GPA		4.93/5

# Certificate of NOVOSIBIRSK STATE UNIVERSITY

Student: Fedorov Vyacheslav Vasilievich

NAME OF SUBJECT	ACADEMIC HRS.	GRADE
I. SEMESTER		
Introduction to Technique of Physical Experiment	70	Excellent
English	88	Excellent
Physical Education	16	Passed
Mechanics and the Theory of Relativity	298	Excellent
Measuring Laboratory Course	106	Excellent
Higher Algebra and Analytic Geometry	158	Excellent
Basics of Mathematical Analysis	266	Excellent
Introduction to Information Technology	70	Passed
II. SEMESTER		
English	88	Good
History of Russia	70	Passed
Physical Education	16	Passed
Molecular Laboratory Course	106	Excellent
Basics of Mathematical Analysis	266	Good
Molecular Physics	194	Excellent
Higher Algebra and Analytic Geometry	158	Excellent
Basics of programming	106	Good
Additional chapters of mathematical analysis	34	Passed
Astrophysical Workshop	16	Passed
The emergence of basic mathematical concepts	16	Excellent
III. SEMESTER		
English	70	Excellent
Complex Variable Theory	138	Excellent
Electromagnetic Workshop	108	Excellent
Physical Education	16	Passed
Programming Laboratory Course	106	Excellent
Differential Equations	120	Excellent
Radio Electronics	106	Passed
Basics of Functional Analysis	138	Excellent
Electricity and Magnetism	242	Excellent
IV. SEMESTER		
Radio Electronics Laboratory Course	70	Excellent
English	70	Good
Physical Education	16	Passed
Laboratory Course of Physical Optics	106	Excellent
Computer Simulation of Physical Phenomena	70	Excellent
Analytical Mechanics	140	Excellent
Electrodynamics and Optics	206	Excellent
Basics of Functional Analysis	138	Excellent
Radio Electronics	106	Excellent
Differential Equations	120	Excellent

NAME OF SUBJECT	ACADEMIC HRS.	GRADE
V. SEMESTER		
Astronomy	70	Excellent
Philosophy	70	Excellent
English	70	Good
Vector and tensor analysis	106	Excellent
Engineering Tools of Automation in Scientific Researches	16	Excellent
Cycle accelerators	70	Excellent
Electrical optics and beam physics	68	Excellent
Microwave electrodynamics	110	Good
Methods of Mathematical Physics	140	Excellent
Quantum Mechanics	174	Excellent
Physics of Continuous Medium	140	Excellent
VI. SEMESTER		
Practice in the Institute	26	Passed
Atomic Laboratory Course	108	Excellent
Philosophy	108	Good
Linear accelerators	108	Excellent
	GPA	4.84/5



Certificate of secondary education  
THE STRUCTURAL SUBDIVISION OF NOVOSIBIRSK STATE  
UNIVERSITY - SPECIALIZED EDUCATIONAL AND SCIENTIFIC  
CENTER OF THE UNIVERSITY, Novosibirsk

Student: Fedorov Vyacheslav Vasilievich

NAME OF SUBJECT	GRADE
Russian language	Excellent
Literature	Excellent
Mathematics	Excellent
History	Good
Social Studies	Excellent
Physics	Excellent
Chemistry	Excellent
Biology	Excellent
German language	Excellent
Computer science	Excellent
Physical Culture and Life Support	Excellent
Astronomy	Passed
Specialized Course in Mathematics	Passed
Specialized Course in Physics	Passed
GPA	4.91/5