

Vladislav V. Kobychhev

Curriculum Vitae

Personal information

Name: Vladislav Valerievich KOBYSHEV
Date of birth: February 01, 1967
Place of birth: Yarensk, Arkhangelsk region, Russia
Citizenship: Ukraine
Current position: Acting Head of the [Lepton Physics Department](#), Institute for Nuclear Research of the National Academy of Sciences of Ukraine.



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Education, academic background

- Physics Department of the Taras Shevchenko National University, Kiev: September 1983 - June 1989. Fields of study: general physics, astrophysics.
- Post-graduate courses in Institute for Nuclear Research of NAS Ukraine: November 1991 - November 1994. Fields of study: experimental nuclear, particle, and high energy physics.

Academic degrees:

- M.Sc. (astrophysics) in Taras Shevchenko National University, Kiev, 1989 (Thesis title: "Population of the rotational levels of two-atomic heteronuclear molecules in interstellar molecular clouds: computer simulation").
- Ph.D. (nuclear, particle and high energy physics), Institute for Nuclear Research, Kiev, 1998 (Thesis title: "[Double beta decay of cadmium, cerium, gadolinium, and tungsten isotopes](#)", supervised by Prof. Yu.G.Zdesenko).
- Assoc. Prof. (2017)

Papers in peer reviewed journals

More than 80 papers, cited more than 2000 times. The up-to-date publication list with citation metrics is available in <http://www.researcherid.com/rid/B-3322-2008>

Scopus Author ID: [36094219000](#).

ORCID ID: [0000-0003-0030-7451](#).

Main achievements

- The best lower limits on half-life for neutrinoless double beta decay of ^{116}Cd and many other isotopes of Cd, W, Zn, and Gd.

- One of the best upper limits on the Majorana mass of electron neutrino (1.4 eV).
- The first observation of alpha activity of natural tungsten (^{180}W) and europium (^{151}Eu).
- The best limits on the Pauli principle violation in nuclei, on decay of nucleon pairs into invisible channels, on the flux of low-energy antineutrinos in the Earth, on heavy neutrino mixing to electron neutrino, on electromagnetic properties of neutrino (all the limits are obtained with Borexino and CTF detectors).
- Measurement of the flux of low-energy solar neutrinos and of geo-neutrino, the first observation of the solar CNO neutrino in the Borexino detector.
- The best (on the moment of publication) upper limit on the electric charge of photon.
- Limits on mass and coupling constants of hadronic axion emitted by ^7Li , ^{57}Fe and ^{83}Kr in the solar core.
- The investigation of many inorganic crystal scintillators (molybdates, tungstates, fluorides) as detectors of rare nuclear events and for dark matter search.

Professional activity and positions

- August 1989 to November 1991: Research Engineer, 2nd class, in the Solotvina Underground Laboratory of the Lepton Physics Department (LPD) of the Institute for Nuclear Research (INR), Solotvina, Ukraine. Duties: running of low-background experiments in the Solotvina Underground Laboratory.
- November 1994 to March 1999: Research Engineer, 1st class, in LPD INR, Kiev, Ukraine. Duties: Computer processing of data in double beta decay experiments with scintillators CdWO_4 and Gd_2SiO_5 , development of software and electronics units for these experiments.
- March 1999 to May 2001: Researcher; May 2003 to May 2021: Senior Researcher; May 2021 to August 2022: Leading Researcher; August 2022 to present: Acting head of department in LPD INR, Kiev, Ukraine. Participating in activities of BOREXINO, SuperNEMO, DAMA, AMoRE, Kiev-Firenze, CUPID-Mo collaborations.

Temporary positions:

- May 2001 to May 2003: Post-doctoral fellowship in Laboratori Nazionali del Gran Sasso (INFN, Italy). Duties: Data taking on the Counting Test Facility of the BOREXINO collaboration.
- October 2010 to April 2011: Visiting Researcher (Brain Korea fellowship) in the Department of Physics and Astronomy of Seoul National University (Seoul, Korea), work in AMoRE collaboration.
- December 2012 to December 2013: Visiting Professor (Brain Korea fellowship) in Kyungpook National University (Daegu, Korea), work in AMoRE collaboration.
- March 2018 to June 2018: Visiting Professor in Rome II «Tor Vergata» University.

Research interests and expertise

My main research areas are in the field of experimental non-accelerator nuclear and particle physics:

- development of scintillation detectors for super-low background experiments (investigations of double beta decay and other rare and forbidden nuclear decays, dark matter search etc.);
- processing of data obtained in these experiments;
- Monte-Carlo simulation of these detectors (with Geant4 and other software).

I participated in the following international collaborations:

- BOREXINO (since 2001);
- DAMA (R&D and small experiments);
- Kiev-Firenze (since 1998);
- NEMO-2 (in 1992-1993);
- SuperNEMO (2006-2009).
- EURECA (2007-2014).
- AMoRE (since 2009).
- DarkSide (2012-2015).
- CUPID-Mo (since 2018).

Professional awards

- *Sinelnikov Prize of NASU* (2007, together with F.A.Danevich and V.I.Tretyak) for the cycle of experimental studies of rare processes in nuclear and particle physics.
- *State Prize of Ukraine in Science and Technology* (2016, together with F.A. Danevich, Yu.G. Zdesenko, G.P. Kovtun, L.L. Nagornaya, V.I. Tretyak, I.A. Tupitsyna, A.P.Shcherban) for experimental studies of properties of neutrino and weak interactions, search for effects beyond the Standard Model, investigation of rare nuclear decays.

Teaching activity

- In 2006-2009, I gave (together with two colleagues) [a course of astroparticle physics](#) for graduate students in the Physics Faculty of the Taras Shevchenko National University, Kiev.
- In 2018, I gave a course on Monte Carlo simulation in non-accelerator nuclear physics for PhD students in Rome II «Tor Vergata» University.
- Since 2019, I read a course on radioactivity for PhD students in INR of NAS Ukraine.
- I supervised graduate MSc students and one PhD student (defended in 2007).

Memberships

- International Astronomical Union (IAU), member
- Ukrainian Astronomical Association (UAA), member