

Curriculum Vitae
Sergiy Yurchenko

Personal data

Birthdate: 19,05,1982.

Currently live in Kiev.

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Education

2004-2007: Postgraduate studies in National Taras Shevchenko Kiev State University. Department of Experimental Nuclear Physics.

1999-2004: Study of physics in National Taras Shevchenko Kiev State University, Department of Experimental Nuclear Physics. Degree: M.S. Diploma in experimental nuclear physics.

Professional Employment

2002-present: **Junior Researcher**. Department of Lepton Physics, Institute for Nuclear Researches, Ukrainian National Academy of Sciences.

Research activity

Search for double beta decay, study of rare and forbidden nuclear processes, investigations of solid-state nuclear track detectors. Development of low-background scintillation experimental techniques. Developments of solid-state detectors spectroscopic techniques. Measurements, simulations, data analysis.

Individual activity:

Signals and images processing. development of pulse shapes discrimination and images recognition techniques; applications of neural networks and wavelets; mathematical algorithms development; data processing automation.

Extensive usage of C#, C++, MATLAB, FORTRAN.

Completed projects:

- Set of programs for processing of recorded scintillation signals: filtering, edges detection, recognition, parameters evaluation (C#, C++, MATLAB, FORTRAN)
- Program for analysis of recorded raster images for usage with solid-state nuclear track detectors: filtering, search of objects, recognition, parameters evaluation (MATLAB).
- Framework for experimental data analysis in low-background experiments (MATLAB).

Main scientific publications:

1. F. A. Danevich, Yu. G. Zdesenko, S. S. Nagorny, S. S. Yurchenko // *Application of artificial neural networks for pulse shape analysis in CdWO₄* // Scientific Papers of KINR – 2004. Vol. 126. – No. 1. – p. 133.
2. F. A. Danevich, A. Sh. Georgadze, V. V. Kobychhev, B. N. Kropivyansky, S. S. Nagorny, A. S. Nikolaiko, D. V. Poda, V. I. Tretyak, S. S. Yurchenko, S. Yu. Zdesenko, Yu. G. Zdesenko // *Radioactive contamination of CaWO₄, ZnWO₄, CdWO₄, BGO and GSO crystal scintillators* // Abstracts Book of 3rd Int. Workshop on Phys. Aspects Luminisc. Complex Oxide Dielectrics, 14-17.09.2004, Kharkiv, Ukraine – 2004, p. 20.
3. F. A. Danevich et al, // *Pulse-shape discrimination with CaWO₄, ZnWO₄ and CdWO₄ crystal scintillators.* // Abstracts Book of 3rd Int. Workshop on Phys. Aspects Luminisc. Complex Oxide Dielectrics, 14-17.09.2004, Kharkiv, Ukraine – 2004, p. 21.
4. F. A. Danevich, V. V. Kobychhev, S. S. Nagorny, D. V. Poda, V. I. Tretyak, S. S. Yurchenko, Yu. G. Zdesenko // *ZnWO₄ crystals as detectors for 2β decay and dark matter experiments* // NIM A **544** (2005) 553-564.
5. S. Repetsky, Yu. Onishchuk, V. Yashchuk, Yu. Piryatinski, K. Kushnir, S. Yurchenko // *Physical properties of polymers as solid-state nuclear track detectors* // Uzhorod University SCIENTIFIC HERALD. Series Physics – 2005. Vol. 17. – p. 153.
6. S. Gorbachov, Yu. Onishchuk, S. Yurchenko // *Elaboration of alpha spectrometry approach using solid-state nuclear track detectors* // Uzhorod University SCIENTIFIC HERALD. Series Physics – 2005. Vol. 17. – p. 167.
7. F. A. Danevich, V. V. Kobychhev, B. N. Kropivyansky, S. S. Nagorny, A. S. Nikolaiko, D. V. Poda, V. I. Tretyak, S. S. Yurchenko, L. Bardelli, M. Bini, P. G. Bizzeti, T. F. Fazzini, P. R. Maurenzig, B. V. Grinyov, L. L. Nagornaya, E. N. Pirogov, V. D. Ryzhikov, V. B. Brudanin, M. V. Korjik, I. M. Solsky // *Application of PbWO₄ crystal scintillators in experiment to search for 2β decay of ¹¹⁶Cd* // nucl-ex/0412021.
8. S. Repetsky, Yu. Onishchuk, V. Yashchuk, Yu. Piryatinski, K. Kushnir, S. Yurchenko // *Electron and atomic structure of polimers: implication to nuclear tracks formation* // Radiat. Measur. **40** (2005) 204-212.
9. P. Belli, R. Bernabei, R. S. Boiko, R. Cerulli, F. A. Danevich, S. d'Angelo, A. Incicchitti, V. V. Kobychhev, B. N. Kropivyansky, M. Laubenstein, P. G. Nagorny, S. S. Nagorny, S. Nisi, D. V. Poda, D. Prospero, V. I. Tretyak, I. N. Vishnevsky, S. S. Yurchenko (ARMONIA Collaboration). // *Preliminary results on the search for ¹⁰⁰Mo 2β decay to the first excited 0+1 level of ¹⁰⁰Ru.* // Preprint ROM2F-2006-20, Rome, 2006 – 6 p.
10. L. Bardelli, M. Bini, P. G. Bizzeti, L. Carraresi, F. A. Danevich, T. F. Fazzini, B. V. Grinyov, N. V. Ivannikova, V. V. Kobychhev, B. N. Kropivyansky, P. R. Maurenzig, L. L. Nagornaya, S. S. Nagorny, A. S. Nikolaiko, A. A. Pavlyuk, D. V. Poda, I. M. Solsky, M. V. Sopinsky, Yu. G. Stenin, F. Taccetti, V. I. Tretyak, Ya. V. Vasiliev, S. S. Yurchenko // *Further study of CdWO₄ crystal scintillators as detectors for high sensitivity 2β*

experiments: Scintillation properties and pulse-shape discrimination // Nucl. Instr. Meth. A. – 2006. – Vol. 569. – P. 743–753.

11. P.Belli, R.Bernabei, A.Bussolotti, F.Montecchia, F.Nozzoli, A. d'Angelo, F.Cappella, A.Incicchitti, A.Mattei, D.Prosperi, S.Castellano, R.Cerulli, C.J.Dai, H.L.He, H.H.Kuang, J.M.Ma, X.D.Sheng, R.G.Wang, Y.J.Zhang, Z.P.Ye, M.Angelone, P.Batistoni, M.Pillon, F.A.Danevich, V.V.Kobychev, S.S.Nagorny, D.V.Poda, V.I.Tretyak, S.S.Yurchenko, M.Martinez. // **DAMA. Dark matter search.** // LNGS Annual report 2005 – LNGS, Assergi, 2006. - p.39-62.
12. A.N. Annenkov, O.A. Buzanov, F.A. Danevich, A.Sh. Georgadze, S.K. Kim, H.J. Kim, Y.D. Kim, V.V. Kobychev, V.N. Kornoukhov, M. Korzhik, J.I. Lee, O Missevitch, V.M. Mokina, S.S. Nagorny, A.S. Nikolaiko, D.V. Poda, R.B. Podvianuk, D.J. Sedlak, O.G. Shulkova, J.H. So, I.M. Solsky, V.I. Tretyak, S.S. Yurchenko // **Development of CaMoO_4 crystal scintillators for double beta decay experiment with ^{100}Mo** // Nucl. Instr. Meth. A. – 2008. – Vol. 584 - P. 334–345.
13. P. Belli, R. Bernabei, F. Cappella, R. Cerulli, C.J. Dai, F.A. Danevich, B.V. Grinyov, A. Incicchitti, V.V. Kobychev, L.L. Nagornaya, S.S. Nagorny, F. Nozzoli, D.V. Poda, D. Prospero, V.I. Tretyak, S.S. Yurchenko // **Search for 2β processes in ^{64}Zn with the help of ZnWO_4 crystal scintillator** // Physics Letters B 658 (2008) 193–197.
14. P. Belli, R. Bernabei, N. Bukilic, F. Cappella, R. Cerulli, C. J. Dai, F. A. Danevich, J. R. de Laeter, A. Incicchitti, V. V. Kobychev, S. S. Nagorny, S. Nisi, F. Nozzoli, D. V. Poda, D. Prospero, V. I. Tretyak, and S. S. Yurchenko // **Investigation of β decay of ^{113}Cd** // Phys. Rev. C 76, 064603 (2007).
15. P. Belli, R. Bernabei, F. Cappella, R. Cerulli, C.J. Dai. F.A. Danevich, A. d'Angelo, A. Incicchitti, V.V. Kobychev, S.S. Nagorny, S. Nisi, F. Nozzoli, D. Prospero, V.I. Tretyak, S.S. Yurchenko, // **Search for alpha decay of natural Europium** // Nucl. Phys. A 789 (2007) 15.

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