

Curriculum Vitae

Name: Alexander Pavlovich Kamantsev

Birthday: 18-APR-1989

Acad. Degrees: PhD

Address: Kotelnikov Institute of Radioengineering and Electronics of Russian Academy of Sciences (Kotelnikov IRE RAS), Laboratory of Magnetic Phenomena in Microelectronics, 11/7 Mokhovaya st., 125009, Moscow, Russia.

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<http://nanophys.ru/>



Education

1996-1999 Pupil in School No 6, Chelyabinsk, Russia.

1999-2006 Pupil in Physic & Mathematics Lyceum No 31, Chelyabinsk, Russia.

2006 Participant of Intel International Scientific & Engineering Fair (Intel ISEF-2006), Indianapolis, IN, USA.

2006 First prize in Fourteenth International Competition for High School (Lyceum) Students in Research Projects in Physics "FIRST STEP TO NOBEL PRIZE IN PHYSICS" (FS XIV), Warsaw, Poland.
http://www.ifpan.edu.pl/firststep/res_fsXIV.html

2006-2012 Student in Moscow Institute of Physics and Technology (MIPT State University). Department of Physical and Quantum Electronics. Specialty: "Applied Mathematics and Physics".

2010 The degree of Bachelor was awarded. Bachelor's diploma-work: "Investigation of possibilities of application the magnetic materials with phase transitions for creation magnetic refrigerator or heat pump". Supervisor: Dr. V.V. Koledov, Kotelnikov IRE RAS.

2010-2012 Graduate student in Moscow Institute of Physics and Technology. Master's program: "Solid State Electronics".

2012 The degree of "Master of Applied Mathematics & Physics" was awarded. Master's diploma-work: "Thermodynamic and relaxation processes near phase transitions in advanced magnetocaloric materials". Supervisor: Dr. V.V. Koledov, Kotelnikov IRE RAS.

2012-2016 PhD student in Kotelnikov IRE RAS, Laboratory of Magnetic Phenomena in Microelectronics. PhD's program: "Physics of Magnetic Phenomena". Adviser: Dr. V.V. Koledov.

2013 Participant of European School on Magnetism, Feb. 25th – Mar. 8th, 2013, Cargèse, France.

2013 Participant of IEEE Magnetics 2013 Summer School, June 9-14, 2013, Assisi, Italy.

2021 The degree of PhD (Physical and Mathematical Sciences in specialty – Condensed matter physics) was awarded. Thesis: "Phase transitions and magnetocaloric effect in Gd, Mn-based compounds and FeRh alloys in high magnetic fields".

Relevant work experience

- 2009-2016** Engineer in Kotelnikov IRE RAS.
- 2010-present** Executor of different Russian and International Research Grants of RFBR, CRDF, RSF in Laboratory of Magnetic Phenomena in Microelectronics (Kotelnikov IRE RAS).
- 2012-2016** Researcher (during one month on the half of the year) in International Laboratory of High Magnetic Fields and Low Temperatures, Wroclaw, Poland. <https://www.intibs.pl/en/>
- 2013** Executor of joint Russia-USA CRDF Grant in Oak Ridge National Laboratory (ORNL) and Argonne National Laboratory (ANL).
- 2016-2021** Junior Researcher in Kotelnikov IRE RAS.
- 2018-2020** Researcher (during two weeks on the half of the year) in Dresden High Magnetic Field Laboratory (HLD-HZDR), Dresden, Germany. <https://www.hzdr.de/db/Cms?pNid=580>
- 2021-2023** Researcher in Kotelnikov IRE RAS.
- 2023-present** Senior researcher in Kotelnikov IRE RAS.

Awards

- 2013** The Second Poster Award for the presentation: "Direct Research of Magnetocaloric Properties of Ni-Mn-In-Co Alloy in High Magnetic Fields" has received during the JEMS-2013 Joint European Magnetic Symposia held August 25-30, 2013, Rhodes, Greece.
- 2016** Russian President's Fellowship for young scientists and graduate students 2016-2018 № SP-554.2016.1. "The investigations of general functional characteristics of magnetic materials with a giant magnetocaloric effect. The study of the possibility of creation of high efficient refrigeration system at room temperature on the basis of these materials."

Research areas

- The experimental studies of rates and critical behavior of the magnetic, magnetostructural and metamagnetostructural phase transitions. The experimental methods assume measurements of achievable working frequencies of devices based on materials with phase transitions.
- The experimental studies of magnetocaloric effect in prospective materials under adiabatic and quasi-isothermal conditions in high magnetic fields including the new fiber-optical temperature probe with ultra-fast response (≈ 1 microsec).
- The experimental studies of new ferromagnetic Heusler alloys with shape memory effect. Possibilities to control the giant strains in polycrystalline ferromagnetic Heusler functional alloys during structural magnetic-field-induced martensitic phase transitions.
- The experimental studies of electromagnetic waves, which were emitted from solid materials at structural phase transitions in the frequencies range of 30 GHz. The possible mechanisms and theory of such effect were developed.
- The experimental studies of magnetic levitation and superconductivity in HTSC materials.

Main publications on English

1. GIANT IRREVERSIBILITY OF THE INVERSE MAGNETOCALORIC EFFECT IN THE NI₄₇MN₄₀SN_{12.5}CU_{0.5} HEUSLER ALLOY

Kamantsev A.P., Koshkidko Yu.S., Bykov E.O., Gottschall T., Gamzatov A.G., Aliev A.M., Varzaneh A.G., Kameli P.

Applied Physics Letters. 2023. T. 123. № 20.

DOI: 10.1063/5.0176772 (IF = 3.6, Q1)

2. INVERSE MAGNETOCALORIC EFFECT IN HEUSLER NI_{44.4}MN_{36.2}SN_{14.9}CU_{4.5} ALLOY AT LOW TEMPERATURES

Kamantsev A.P., Koshkid'ko Yu.S., Gaifullin R.Yu., Musabirov I.I., Koshelev A.V., Mashirov A.V., Sokolovskiy V.V., Buchelnikov V.D., Ćwik Ja., Shavrov V.G.

Metals. 2023. T. 13. № 12. C. 1985.

DOI: 10.3390/met13121985 (IF = 3.006, Q1)

3. ADVANCED NON-CONTACT OPTICAL METHODS FOR MEASURING THE MAGNETOCALORIC EFFECT

Kamantsev A.P., Amirov A.A., Yusupov D.M., Butvina L.N., Koshkid'ko Yu.S., Golovchan A.V., Valkov V.I., Aliev A.M., Koledov V.V., Shavrov V.G.

Physics of Metals and Metallography. 2023. T. 124. № 11. C. 1075-1091.

DOI: 10.1134/s0031918x23601646 (IF = 1.168, Q3)

4. EFFECT OF MAGNETIC FIELD AND HYDROSTATIC PRESSURE ON METAMAGNETIC ISOSTRUCTURAL PHASE TRANSITION AND MULTICALORIC RESPONSE OF FE₄₉RH₅₁ ALLOY

Kamantsev A.P., Amirov A.A., Zaporozhets V.D., Gribanov I.F., Golovchan A.V., Valkov V.I., Pavlukhina O.O., Sokolovskiy V.V., Buchelnikov V.D., Aliev A.M., Koledov V.V.

Metals. 2023. V. 13. P. 956.

DOI: 10.3390/met13050956 (IF = 3.006, Q1)

5. ENTROPY CHANGE OF MAGNETOSTRUCTURAL TRANSFORMATION AND MAGNETOCALORIC PROPERTIES IN A NI₅₀MN_{18.5}GA₂₅CU_{6.5} HEUSLER ALLOY

Li F., Zhao D., Liu J., **Kamantsev A.**, Dilmieva E., Koshkid'ko Yu., Zhu C., Ma Li, Zhen C., Hou D.

Materials Research Bulletin. 2023. V. 158. P. 112050

DOI: 10.1016/j.materresbull.2022.112050 (IF = 5.768, Q1)

6. MAGNETOCALORIC MATERIALS FOR LOW-TEMPERATURE MAGNETIC COOLING

Koshkid'ko Y.S., Dilmieva E.T., **Kamantsev A.P.**, Mashirov A.V., Ćwik J., Kol'chugina N.B., Koledov V.V., Shavrov, V.G.

Journal of Communications Technology and Electronics. 2023. V. 68. №4. P. 379–388.

DOI: 10.1134/S106422692304006X (IF = 0.568, Q3)

7. MAGNETOCALORIC EFFECT AND MAGNETIC PHASE DIAGRAM OF NI-MN-GA HEUSLER ALLOY IN STEADY AND PULSED MAGNETIC FIELDS

Koshkidko Y.S., Ćwik J., Rogacki K., Dilmieva E.T., **Kamantsev A.P.**, Mashirov A.V., Shavrov V.G., Koledov V.V., Khovaylo V.V., Mejia C.S., Zagrebin M.A., Sokolovskiy V.V., Buchelnikov V.D., Ari-Gur P., Bhale P.

Journal of Alloys and Compounds. 2022. V. 904. p. 164051.

DOI: 10.1016/j.jallcom.2022.164051 (IF = 5.316, Q1)

8. TUNABLE SPIN WAVE PROPAGATION IN YIG/FE-RH STRIPE

Odintsov S.A., Grachev A.A., Sadovnikov A.V., Amirov A.A., Rodionova V.V., **Kamantsev A.P.**

IEEE Transactions on Magnetics. 2022. V. 58. № 2. p. 4300904.

DOI: 10.1109/TMAG.2021.3085402 (IF = 2.36, Q2)

9. INVERSE MAGNETOCALORIC EFFECT AND KINETIC ARREST BEHAVIOR IN AS-CAST GD₂IN AT CRYOGENIC TEMPERATURES

Kamantsev A.P., Koshkidko Yu.S., Taskaev S.V., Khovaylo V.V., Koshelev A.V., Cwik J., Shavrov V.G.

Journal of Superconductivity and Novel Magnetism. 2022. V. 35. № 8. P. 2181-2186.

DOI: 10.1007/s10948-022-06336-z (IF = 1.667, Q3)

10. MAGNETOCALORIC EFFECT AND MAGNETIZATION OF GADOLINIUM IN QUASI-STATIONARY AND PULSED MAGNETIC FIELDS OF UP TO 40 KOE

A.P. Kamantsev, V.V. Koledov, V.G. Shavrov, L.N. Butvina, A.V. Golovchan, V.I. Val'kov, B.M. Todris, and S.V. Taskaev

Physics of Metals and Metallography. 2022. V. 123. № 4, pp. 419–423.

DOI: 10.1134/S0031918X22040068 (IF = 1.168, Q3)

11. DYNAMICS OF THE MAGNETOCALORIC EFFECT IN CYCLIC MAGNETIC FIELDS IN NI₅₀MN₃₅AL₂SN₁₃ RIBBON SAMPLE

Gamzatov A.G., Aliev A.M., Batdalov A.B., Khizriev S.K., Kuzmin D.A., **Kamantsev A.P.**, Kim D.-H., Yen N.H., Dan N.H., Yu S.-C.

Journal of Materials Science. 2021. V. 56. № 27. pp. 15397-15406.

DOI: 10.1007/s10853-021-06257-7 (IF = 4.379, Q1)

12. SPECIFIC HEAT, ELECTRICAL RESISTIVITY, AND MAGNETOCALORIC STUDY OF PHASE TRANSITION IN FE₄₈RH₅₂ALLOY

Batdalov A.B., Aliev A.M., Khanov L.N., **Kamantsev A.P.**, Mashirov A.V., Koledov V.V., Shavrov V.G.

Journal of Applied Physics. 2020. V. 128. № 1. p. 013902.

DOI: 10.1063/1.5135320 (IF = 2.768, Q2)

13. DIRECT MEASUREMENTS OF THE MAGNETOCALORIC EFFECT OF FE₄₉RH₅₁ USING THE MIRAGE EFFECT

Amirov A.A., **Kamantsev A.P.**, Aliev A.M., Cugini F., Solzi M., Koledov V.V., Shavrov V.G., Gottschall T., Spichkin Yu.I.

Journal of Applied Physics. 2020. V. 127. № 23. p. 233905.

DOI: 10.1063/5.0006355 (IF = 2.768, Q2)

14. MAGNETOCALORIC EFFECT IN ALLOY FE₄₉RH₅₁ IN PULSED MAGNETIC FIELDS UP TO 50 T

Kamantsev A.P., Koshkid'ko Y.S., Mashirov A.V., Koledov V.V., Shavrov V.G., Amirov A.A., Aliev A.M., Mejía C.S.

Physics of the Solid State. 2020. V. 62. № 1. pp. 160-163.

DOI: 10.1134/S1063783420010151 (IF = 0.59, Q4)

15. VOLTAGE-INDUCED STRAIN TO CONTROL THE MAGNETIZATION OF BI FERH/PZT AND TRI PZT/FERH/PZT LAYERED MAGNETOELECTRIC COMPOSITES

Amirov A.A., Baraban I.A., Rodionov V.V., Yusupov D.M., Rodionova V.V., Grachev A.A., Sadovnikov A.V., **Kamantsev A.P.**

AIP Advances. 2020. V. 10. № 2. P. 025124.

DOI: 10.1063/1.5130026 (IF = 1.6, Q3)

16. GIANT REVERSIBLE ADIABATIC TEMPERATURE CHANGE AND ISOTHERMAL HEAT TRANSFER OF MNAS SINGLE CRYSTALS STUDIED BY DIRECT METHOD IN HIGH MAGNETIC FIELDS

Koshkid'ko Yu.S., Dilmieva E.T., Cwik J., Rogacki K., Kowalska D., **Kamantsev A.P.**, Koledov V.V., Mashirov A.V., Shavrov V.G., Valkov V.I., Golovchan A.V., Sivachenko A.P., Shevyrtaov S.N., Rodionova V.V., Shchetinin I.V., Sampath V.

Journal of Alloys and Compounds. 2019. V. 798. pp. 810-819.

DOI: 10.1016/j.jallcom.2019.05.246 (IF = 5.316, Q1)

17. DIRECT MEASUREMENT OF SHAPE MEMORY EFFECT FOR NI₅₄MN₂₁GA₂₅, NI₅₀MN₄₁.2IN₈.8 HEUSLER ALLOYS IN HIGH MAGNETIC FIELD

Kuchin D.S., Dilmieva E.T., **Kamantsev A.P.**, Koledov V.V., Mashirov A.V., Shavrov V.G., Koshkid'ko Y.S., Cwik J., Rogacki K., Khovaylo V.V.

Journal of Magnetism and Magnetic Materials. 2019. V. 482. pp. 317-322.

DOI: 10.1016/j.jmmm.2019.02.087 (IF = 2.7, Q2)

18. INTERACTION OF OPTICAL AND EHF WAVES WITH VO₂ NANOSIZED FILMS AND PARTICLES

Kamantsev A.P., Koledov V.V., Shavrov V.G., Kalenov D.S., Parkhomenko M.P., Von Gratowski S.V., Shahmirzadi N.V., Pakizeh T., Irzhak A.V., Serdyuk V.M., Titovitsky J.A., Novoselova I.P., Komlev A.A., Komlev A.E., Kuzmin D.A., Bychkov I.V.

IEEE Journal of Electromagnetics, RF and Microwaves in Medicine and Biology. 2019. V. 3. № 1. P. 17-24.

DOI: 10.1109/JERM.2019.2893070 (IF = 3.5, Q1)

19. DIRECT MEASUREMENTS OF ADIABATIC TEMPERATURE CHANGE IN NI₄₉.9MN₃₇.03SB₁₂.3FE_{0.77} ALLOY DUE TO MAGNETOCALORIC EFFECT IN THE TEMPERATURE RANGE OF MARTENSITIC TRANSFORMATION

Konoplyuk S.M., Mashirov A.V., **Kamantsev A.P.**, Koledov V.V., Koshelev A.V., Shavrov V.G., Kokorin V.V.

IEEE Transactions on Magnetics. 2018. V. 54. № 1, p. 2500204.

DOI: 10.1109/TMAG.2017.2761322 (IF = 2.36, Q2)

20. INFLUENCE OF ANNEALING CONDITIONS ON MAGNETIC PROPERTIES, MAGNETOCALORIC EFFECT, AND CRITICAL PARAMETERS OF NI-MN-SN RIBBONS

Yen N.H., Thanh P.T., Thanh T.D., Hau K.X., Dan N.H., Koledov V.V., **Kamantsev A.P.**, Mashirov A.V., Yu S.C.

IEEE Transactions on Magnetics. 2018. T. 54. № 6. C. 2500604.

DOI: 10.1109/TMAG.2018.2816952 (IF = 2.36, Q2)

21. INFLUENCE OF AL ON STRUCTURE, MAGNETIC PROPERTIES AND MAGNETOCALORIC EFFECT OF NI₅₀MN₃₇-XALXSN₁₃ RIBBONS

Nguyen H.Y., Pham T.T., Tran D.T., Nguyen H.D., Vu M.Q., Nguyen L.T., Nguyen H.H., Nguyen T.M., Koledov V., **Kamantsev A.**, Mashirov A.

Advances in Natural Sciences: Nanoscience and Nanotechnology. 2018. T. 9. № 2. C. 025007.

DOI: 10.1088/2043-6254/aac1d2 (IF = 2.626, Q2)

22. MEASUREMENT OF MAGNETOCALORIC EFFECT IN PULSED MAGNETIC FIELDS WITH THE HELP OF INFRARED FIBER OPTICAL TEMPERATURE SENSOR

Kamantsev A.P., Koledov V.V., Mashirov A.V., Shavrov V.G., Yen N.H., Thanh P.T., Quang V.M., Dan N.H., Los A.S., Gilewski A., Tereshina I.S., Butvina L.N.

Journal of Magnetism and Magnetic Materials. 2017. V. 440. pp. 70-73.

DOI: 10.1016/j.jmmm.2016.12.063 (IF = 2.7, Q2)

23. THERMAL AND MAGNETIC HYSTERESIS ASSOCIATED WITH MARTENSITIC AND MAGNETIC PHASE TRANSFORMATIONS IN NI₅₂MN₂₅IN₁₆CO₇ HEUSLER ALLOY

Madiligama A.S.B., Ari-Gur P., Ren Y., Koledov V.V., E.T. Dilmieva, **Kamantsev A.P.**, Mashirov A.V., Shavrov V.G., Gonzalez-Legarreta L., Grande B.H.

Journal of Magnetism and Magnetic Materials. 2017. V. 442. pp. 25-35.
DOI: 10.1016/j.jmmm.2017.06.080 (IF = 2.7, Q2)

24. REVISION OF CLAUSIUS-CLAPEYRON RELATION FOR THE FIRST ORDER PHASE TRANSITION IN NI-MN-IN HEUSLER ALLOYS

Mashirov A.V., **Kamantsev A.P.**, Koshelev A.V., Ovchenkov E.A., Dilmieva E.T., Los A.S., Aliev A.M., Koledov V.V., Shavrov V.G.

IEEE Transactions on Magnetics. 2017. V. 53. № 11. p. 2003904.
DOI: 10.1109/TMAG.2017.2697205 (IF = 2.36, Q2)

25. RESEARCH OF MAGNETOCALORIC EFFECT OF NI-MN-IN-CO HEUSLER ALLOYS BY THE DIRECT METHOD IN MAGNETIC FIELDS UP TO 14 T

Dilmieva E.T., Koshkid'ko Yu.S., **Kamantsev A.P.**, Koledov V.V., Mashirov A.V., Shavrov V.G., Khovaylo V.V., Lyange M.V., Cwik J., Gonzalez-Legarreta L., Grande H.B.

IEEE Transactions on Magnetics. 2017. V. 53. № 11. p. 2503705.
DOI: 10.1109/TMAG.2017.2702577 (IF = 2.36, Q2)

26. REVERSIBLE MAGNETOCALORIC EFFECT IN MATERIALS WITH FIRST ORDER PHASE TRANSITIONS IN CYCLIC MAGNETIC FIELDS: FE₄₈RH₅₂ AND SM_{0.6}SR_{0.4}MNO₃

Aliev A.M., Batdalov A.B., Khanov L.N., **Kamantsev A.P.**, Koledov V.V., Mashirov A.V., Grechishkin R.M., Kaul' A.R., Sampath V.

Applied Physics Letters. 2016. V. 109. № 20. p. 202407.
DOI: 10.1063/1.4968241 (IF = 3.6, Q1)

27. CRYSTALLINE STRUCTURE AND MAGNETIC BEHAVIOR OF THE NI₄₁MN₃₉IN₁₂CO₈ ALLOY DEMONSTRATING GIANT MAGNETOCALORIC EFFECT

Madiligama A.S.B., Kayani A., Ari-Gur P., Shavrov V.G., Koledov V.V., Mashirov A.V., **Kamantsev A.P.**, Dilmieva E.T., Calder S., Gonzalez-Legarreta L., Grande B.H., Vega V.V.

Smart Materials and Structures. 2016. V. 25. № 8. p. 085013.
DOI: 10.1088/0964-1726/25/8/085013 (IF = 4.265, Q1)

28. MAGNETOSTRICTIVE HYPERSOUND GENERATION BY SPIRAL MAGNETS IN THE VICINITY OF MAGNETIC FIELD INDUCED PHASE TRANSITION

Bychkov I.V., Kuzmin D.A., **Kamantsev A.P.**, Koledov V.V., Shavrov V.G.

Journal of Magnetism and Magnetic Materials. 2016. V. 417. pp. 75-79.
DOI: 10.1016/j.jmmm.2016.05.060 (IF = 2.7, Q2)

29. DECIPHERING M-T DIAGRAM OF SHAPE MEMORY HEUSLER ALLOYS: REENTRANCE, PLATEAU AND BEYOND

Sergeenkov S., Córdova C., Ari-Gur P., Koledov V.V., **Kamantsev A.P.**, Shavrov V.G., Mashirov A.V., Gomes A.M., Takeuchi A.Y., de Lima O.F., Araújo-Moreira F.M.

Philosophical Magazine Letters. 2016. V. 96. № 10. pp. 375-382.
DOI: 10.1080/09500839.2016.1225995 (IF = 1.225, Q3)

30. MAGNETOCALORIC AND THERMOMAGNETIC PROPERTIES OF NI_{2.18}MN_{0.82}GA HEUSLER ALLOY IN HIGH MAGNETIC FIELDS UP TO 140 KOE

Kamantsev A.P., Koledov V.V., Mashirov A.V., Dilmieva E.T., Shavrov V.G., Cwik J., Los A.S., Nizhankovskii V.I., Rogacki K., Tereshina I.S., KoshkidKo Y.S., Lyange M.V., Khovaylo V.V., Ari-Gur P.

Journal of Applied Physics. 2015. V. 117. № 16. p. 163903.
DOI: 10.1063/1.4918914 (IF = 2.768, Q2)

31. FIELD DEPENDENCE OF THE MAGNETOCALORIC EFFECT IN MNFE(P,SI) MATERIALS

Guillou F., Yibole H., Porcari G., Van Dijk N.H., Brück E., **Kamantsev A.**, Koledov V., Cwik J.

IEEE Transactions on Magnetics. 2015. V. 51. № 11. p. 7244252.

DOI: 10.1109/TMAG.2015.2445975 (IF = 2.36, Q2)

32. ELECTROMAGNETIC WAVES GENERATION IN NI₂.14MN_{0.81}GAFE_{0.05} HEUSLER ALLOY AT STRUCTURAL PHASE TRANSITION

Bychkov I., Kuzmin D., Kalenov D., Kamantsev A., Koledov V., Kuchin D., Shavrov V.

Acta Physica Polonica A. 2015. V. 127. № 2. pp. 588-590.

DOI: 10.12693/APhysPolA.127.588 (IF = 0.625, Q4)

33. MAGNETIC SHAPE MEMORY MICROACTUATOR

Kalimullina E., **Kamantsev A.**, Koledov V., Shavrov V., Nizhankovskii V., Irzhak A., Albertini F., Fabbrici S., Ranzieri P., Ari-Gur P.

Physica Status Solidi (C). 2014. V. 11. № 5-6. pp. 1023-1025.

DOI: 10.1002/pssc.201300718 (IF = 0.667, Q4)