

Kaushal Kumar Kesharpu

Curriculum Vitae

Personal Information

Name Kaushal Kumar Kesharpu
Position Researcher
Condensed Matter Theory Division
Bogoliubov Laboratory of Theoretical Physics
Joint Institute for Nuclear Research, Dubna, Russia
Contact Room-118, BLTP, JINR
6, Joliot-Curie St, Dubna, Moscow Region
Russia, 141980
✉ kesharpu@theor.jinr.ru
☎ +7 (916) 076-39-49 📠 kaushal0717
🌐 www.kaushalkesharpu.github.io
🌐 www.theor.jinr.ru/~kesharpu
Nationality Russian
Marital Status Married

Profiles in Scientific Databases

🔗 scholar.google.ru
✂ arxiv.org
🔗 NASA/ADS
🔗 orcid.org
📄 scopus.com
📄 publons.com

Scientific Advisor (Ph. D & Masters)

Dr. Sc. Pavel Dmitrievich Grigoriev
Senior Researcher
L. D. Landau Institute for Theoretical Physics, RAS
Building-1 A, Prospekt Akademika Seimonova
Chernogalovka, Moscow Region, 142432, Russia
✉ grigoriev@itp.ac.ru
🌐 www.itp.ac.ru

Specialisation and Research interest

Specialisation

- Condensed matter theory • Quantum field theory • Statistical physics

Current research interest

- High temperature superconductivity • Topological materials •
- Strongly correlated electronic systems • Majorana Fermions •
- Topological Superconductivity •

Education

- 2017–2021 Ph.D. in Physics and Astronomy «*s otlichem*»
Department of Theoretical Physics & Quantum Technology
National University of Science & Technology «MISiS»
Moscow, Russia
Thesis: Electronic transport in highly an-isotropic superconductors
www.misis.ru/science/dissertations/2022/3613
- 2015–2017 Masters in Physics & Astronomy «*s otlichem*»
Department of Theoretical Physics & Quantum Technology
National University of Science & Technology «MISiS»
Moscow, Russia
Thesis: Conductivity in systems with partially gaped Fermi surfaces

Research Experience

- 2022– ... Researcher
Condensed Matter Theory Division
BLTP, JINR, Dubna, Russia
- 2020–2021 Researcher
Laboratory of Modelling and development of new materials
NUST «MISiS», Moscow, Russia
- 2017–2019 Research Engineer
Scientific Research Centre of Material & Nanotechnology
NUST «MISiS», Moscow, Russia
- 2016–2017 Laboratory assistant
Laboratory of Modelling and development of new materials
NUST «MISiS», Moscow, Russia

Grants

- 2022-2025 Leader
Basis foundation, Junior Post-Doc, Grant № 23-1-4-63-1
www.basis-foundation.ru
- 2022- ... Leader
JINR grant for young scientists
<https://indico.jinr.ru>
- 2021-2024 Participant
RFBR, Grant № 21-52-12027, Participant
www.rfbr.ru
- 2019-2022 Participant
RFBR, «Aspiranti» Grant № 19-32-90241
www.rfbr.ru
- 2018-2021 Participant
Basis foundation, Junior Leaders Competition
www.basis-foundation.ru

Publications in Scientific Journals

On Topological Materials

- **K.K. Kesharpu**, E.A. Kochetov, Alvarro Ferraz, "Topological Hall effect induced by classical large-spin background: $su(2)$ path-integral approach", *Phys. Rev. B* **107**, 155146 (2022)
[doi 10.1103/PhysRevB.107.155146](https://doi.org/10.1103/PhysRevB.107.155146)
- **K.K. Kesharpu**, "Flipping chiral edge states through nuclear spin S and spin modulating vector in topological insulators", *arXiv:2305.13423* (Submitted to PRB.)
[doi 10.48550/arXiv.2305.13423](https://doi.org/10.48550/arXiv.2305.13423)
- **K.K. Kesharpu**, E.A. Kochetov, "Spin-flip-induced superfluidity in a ring of spinful hard-core bosons", *Phys. Rev. A* **106**, 033323 (2022)
[doi 10.1103/PhysRevA.106.033323](https://doi.org/10.1103/PhysRevA.106.033323)

On High-Tc Superconductivity

- **K.K. Kesharpu**, V.D. Kochev, P.D. Grigoriev, "Evolution of Shape and Volume Fraction of Superconducting Domains with Temperature and Anion Disorder in $(TMTSF)_2ClO_4$ ", *Crystals*, **11**(1), 72 (2021)
[doi 10.1103/PhysRevB.103.014519](https://doi.org/10.1103/PhysRevB.103.014519)

- V.D. Kochev, **K.K. Kesharpu**, P.D. Grigoriev, "Anisotropic zero-resistance onset in organic superconductors", *Phys. Rev. B* **103**, 014519 (2021)
doi [10.3390/cryst11010072](https://doi.org/10.3390/cryst11010072)

- S.S. Seidov, **K.K. Kesharpu**, P.I. Karpov, P.D. Grigoriev, "Conductivity of anisotropic inhomogeneous superconductors above the critical temperature", *Phys. Rev. B* **98**, 014515
doi [10.1103/PhysRevB.98.014515](https://doi.org/10.1103/PhysRevB.98.014515)

- P.D. Grigoriev, A.A. Sinchenko, **K.K. Kesharpu**, A. Shakin, T.I. Mogilyuk, A.P. Orlov, A.V. Frolov, D.S. Lyubshin, D.A. Chareev, O.S. Volkova, A.N. Vasiliev, Anisotropic effect of appearing superconductivity on the electron transport in FeSe, *JETP Lett.*, **105(12)**, 786-791 (2017)
doi [10.1134/S0021364017120074](https://doi.org/10.1134/S0021364017120074)

- **K.K. Kesharpu**, V.D. Kochev, P.D. Grigoriev, "Peculiar effect of sample size in layered superconductors", *AIP Conference Proceedings*, **2551**, 030002 (2022)
doi [10.1063/5.0098901](https://doi.org/10.1063/5.0098901)

- **K.K. Kesharpu**, P.D. Grigoriev, D.I. Lazeva, T.I. Mogilyuk, "Self-consistent and Maxwell approximations to describe the excess conductivity anisotropy in FeSe above superconducting transition temperature", *J. Phys.: Conf. Ser.* **1238** 012010
doi [10.1088/1742-6596/1238/1/012010](https://doi.org/10.1088/1742-6596/1238/1/012010)

- T. I. Mogilyuk, P. D. Grigoriev, **K. K. Kesharpu**, I. A. Koleshnikov, A. A. Sinchenko, A. B. Frolov, A. P. Orlov "Excess conductivity of anisotropic inhomogeneous materials above superconducting critical temperature", *Physics Solid State* (2019) **61**
doi [10.1134/S1063783419090166](https://doi.org/10.1134/S1063783419090166)

On Density Wave Phase in Rare Earth Tritellurides

- Pavel A. Vorobyev, Pavel D. Grigoriev, **Kaushal K. Kesharpu**, Vladimir V. Khovaylo, "The Evolution of Electron Dispersion in the Series of Rare-Earth Tritelluride Compounds Obtained from Their Charge-Density-Wave Properties and Susceptibility Calculations", *Materials* **2019**, *12(14)*, 2264
doi [10.3390/ma12142264](https://doi.org/10.3390/ma12142264)

- **K.K. Kesharpu**, P.D. Grigoriev, "Temperature dependence of resistivity at the transition to a charge density wave state in rare-earth tritellurides", *J. Phys.: Conf. Ser.* **1238** 012019
doi [10.1088/1742-6596/1238/1/012019](https://doi.org/10.1088/1742-6596/1238/1/012019)

Talks at Scientific Conferences

- 2023 III International conference on «Condensed Matter Physics»
29 May - 03 June, Chernogolovka, Russia
www.issp.ac.ru
- 2023 XX Conference on Strongly correlated electronic systems and Quantum critical phenomenons
25 May, Moscow, Russia
sces.lebedev.ru
- 2023 international workshop on «Superconducting and Magnetic Hybrid Structures»
11-15 July, Dubna, Russia
indico.jinr.ru/event/3615
- 2022 Modern Problems of Condensed Matter Theory (CMT2022)
17-22 October, Dubna, Russia
indico.jinr.ru/event/3097
- 2021 XX School-Conference of young scientists «Problems of condensed matter physics and high pressure physics»
16-26 September, Sochi, Russia
school.lpi.ru
- 2021 International Conference on Low-dimensional materials: theory, modelling, experiment (LDM2021)
12-17 July, Dubna, Russia
indico.jinr.ru
- 2020 XIX All russian conference on problems of condensed matter physics and high pressure
18- 27 September, Burevestnik, Russia
troitsk.ru
- 2019 Interaction between Radiation and Quantum matter
2-5 July, Moscow, Russia
irq2019.mpgu.edu
- 2019 Modern Trends in Condensed Matter Physics (Lev Gor'kov Memorial Conference)
24-27 June, Chernogolovka, Russia
gorkovconf.itp.ac.ru
- 2018 International Workshop on Localisation, Interactions and Superconductivity
30 June-4 July, Chernogolovka, Russia
intgroup.itp.ac.ru

- 2018 International Conference in remembrance of Alexei Abrikosov
25–28 June, Chernogolovka, Russia
abrikosovconf.itp.ac.ru
- 2018 IV International Laser, Plasma Research and Technology LaPlaz-2018
30 January–1 February, Moscow, Russia
conf.laplas.mephi.ru

Miscellaneous

Software

GNU Emacs • Python • Mathematica

Languages

English • Russian • Odia • Telugu • Hindi

Recommendation

Dr. Sc. Pavel Dmitrievich Grigoriev

Senior Researcher

L. D. Landau Institute for Theoretical Physics, RAS

Building-1 A, Prospekt Akademika Seimonova

Chernogalovka, Moscow Region, 142432, Russia

✉ grigoriev@itp.ac.ru

🌐 www.itp.ac.ru

Dr. Sc. Sergei Ivanovich Mukhin

Head of Department

Department of Theoretical Physics & Quantum Technology

National University of Science & Technology «MISiS»

Building-4, Leninskii Prospekt

Moscow, 119049, Russia

✉ i.m.sergei.m@maill.com

🌐 www.misis.ru

Dr. Sc. Evgenii Andreevich Kochetov

Head of Sector № 3

Division of Condensed Matter Theory

Bogoliubov Laboratory of Theoretical Physics

Joint Institute for Nuclear Research

Room-432, BLTP, JINR

6, Joliot-Curie St, Dubna, Moscow Region

Russia, 141980

✉ kochetov@theor.jinr.ru
