Igor A. Shovkovy

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Employment

- **Jul. 2023 – present**
  Faculty Head of Polytechnic Science and Mathematics
  Arizona State University, Polytechnic campus
  School of Applied Sciences and Arts
  Mesa, Arizona, USA
- **Aug. 2017 – present**
  Professor
  Arizona State University, Polytechnic campus
  Mesa, Arizona, USA
- **Aug. 2012 – Aug. 2017**
  Associate Professor
  Arizona State University, Polytechnic campus
  Mesa, Arizona, USA
- **Aug. 2008 – Aug. 2012**
  Assistant Professor
  Arizona State University, Polytechnic campus
  Mesa, Arizona, USA
- **Aug. 2006 – Aug. 2008**
  Assistant Professor
  Western Illinois University
  Macomb, Illinois, USA
- **Oct. 2004 – Aug. 2006**
  Junior Fellow
  Frankfurt Institute for Advanced Studies
  Frankfurt am Main, Germany
- **Oct. 2002 – Sep. 2004**
  Research Associate
  Johann Wolfgang Goethe-University
  Frankfurt am Main, Germany
- **Oct. 2000 – Sep. 2002**
  Research Associate
  University of Minnesota
  Minneapolis, Minnesota, USA
- **Oct. 1997 – Sep. 2000**
  Research Associate
  University of Cincinnati
  Cincinnati, Ohio, USA
- **Feb. 1997 – Sep. 1997**
  Junior Research Fellow
  Bogolyubov Institute for Theoretical Physics
  Kyiv, Ukraine

Education

- **Oct. 1993 – Feb. 1997**
  Ph. D. in Physics (1997)
  Bogolyubov Institute for Theoretical Physics, Kyiv, Ukraine
  Thesis advisors: *V. A. Miransky & V. P. Gusynin*
  Dissertation: *Effective Lagrangians and dynamical symmetry breaking in external magnetic fields*
- **Sep. 1995 – Aug. 1996**
  Exchange graduate student
  University of Western Ontario, London, ON, Canada
  Advisor: *V. A. Miransky*
- **Sep. 1988 – Jun. 1993**
  M. Sc. in Physics (1993)
  T. Shevchen Kyiv State University, Kyiv, Ukraine
  Thesis advisor: *V. P. Gusynin*
  Thesis: *Low energy effective Lagrangian in quantum electrodynamics (derivative expansion)*

Research grants

- **2022 – 2026**: National Science Foundation grant "Research in relativistic plasma under extreme conditions" (PI: I. A. Shovkovy, Grant No. PHY-2209470)
- **2017 – 2022**: National Science Foundation grant "Research in quantum field theory: Anomalous properties of chiral matter" (PI: I. A. Shovkovy, Grant No. PHY-1713950)
- **2014 – 2018**: National Science Foundation grant "Research in quantum field theory: Relativistic matter in a magnetic field" (PI: I. A. Shovkovy, Grant No. PHY-1404232)
- **2010 – 2014**: National Science Foundation grant "Relativistic matter under extreme conditions" (PI: I. A. Shovkovy, Grant No. PHY-0969844)
- **2005 – 2008**: Deutsche Forschungsgemeinschaft (DFG) grant "Instabilities in superconducting and superfluid matter" (PI: D. H. Rischke, Co-PI: I. A. Shovkovy, Grant No. 18448644)

Honors and Awards

- **2014**: Visiting Professorship for Senior International Scientists of the Chinese Academy of Sciences, Institute of High Energy Physics, Beijing, China
- **2011**: Outstanding Referee for the journals of the American Physical Society
- **1997**: Prize of the National Academy of Sciences of Ukraine for young scientists
- **1997**: V. N. Gribov Scholarship at the International School of Subnuclear Physics (35^{th} course), Erice, Italy
- **1995**: Graduate student Soros Grant No. PSU052143
- **1993**: Undergraduate student Soros Grant

Postdoctoral mentoring

- **Dr. Ritesh Ghosh** (Nov. 2023 – Nov. 2025)

Former Ph.D. students

- **Denys Rybalka** (Aug. 2015 – May 2019), **Ph.D.** thesis defended on March 25, 2019, ASU
  Current position: Software Consultant, TNG Technology Consulting, Germany
- **Dr. Lifang Xia** (Aug. 2013 – May 2016), **Ph.D.** thesis defended on April 13, 2016, ASU
  Current position: private sector
- **Dr. Xinyang Wang** (Aug. 2009 – Aug. 2013), **Ph.D.** thesis defended on July 2, 2013, ASU
  (Aug. 2006 – May 2008), **M.Sc.** thesis defended on May 6, 2008, WIU
  Current position: Professor & Executive Director of the Center for Fundemental Physics, Anhui University of Science & Technology, Huainan, China
- **Dr. Lang Yu** (Jun. 2010 – May 2012), **Ph.D.** thesis defended on April 6, 2012, ASU
  Current position: faculty member at Jilin University, Changchun 130012, China

Dissertation committee member

- Bonfilio (Lio) Nainggolan (chair Dr. K. Schmidt), Physics Department, ASU, 2026 (expected)
- Sebastian Cole (chair Dr. M. Dugger), Physics Department, ASU, July 2, 2021
- Rong Chen (chair Dr. K. Schmidt), Physics Department, ASU, July 9, 2020
- Cody Petrie (chair Dr. K. Schmidt), Physics Department, ASU, May 23, 2019
- Adam Blake (chair Dr. M. Sukharev), Physics Department, ASU, November 2, 2016
- Lili Yang (chair Dr. C. Lunardini), Physics Department, ASU, November 14, 2013
- Joel Lynn (chair Dr. K. Schmidt), Physics Department, ASU, April 1, 2013
- Brian Morrison (chair Dr. B. Ritchie), Physics Department, ASU, November 15, 2011

External examiner of Ph.D. dissertation theses

- Debarshi Dey (advisor: Dr. Binoy Krishna Patra), Indian Institute of Technology Roorkee, Roorkee 247667, India, 2024
- Pavlo Pyatkovskiy (advisor: Dr. V.A. Miransky), Western University, London, ON, 2015
- Jorge Noronha (advisor: Dr. D.H. Rischke), Goethe-University, Frankfurt am Main, 2007
- Sirous Homayouni (advisor: Dr. V.A. Miransky), University of Western Ontario, 2006

External examiner of M.Sc. dissertation theses

- Thiago H. Moreira (advisor: Dr. Fábio L. Braghin), The Federal University of Goiás, Brazil, January 28, 2022

Additional graduate student mentoring at ASU

- Jorge Jaber-Urquiza (Aug. 2023 – Sep. 2023), exchange graduate (Ph.D.) student from the National Autonomous University of Mexico, Mexico
- Danis Yangaliev (Jan. 2020 – Dec. 2020), graduate research (PHY-500 & PHY-792), ASU
- Zhaofeng Gan (Jun. 2010 – Aug. 2010), graduate research (PHY-792), ASU
- Zhaofeng Gan (Jan. 2010 – May 2010), research rotation (PHY-500), ASU

Additional undergraduate student mentoring at ASU

- Natalie Figueroa (Sep. 2022 – May 2024), two undergraduate honors projects and honors thesis, ASU
- Jack Hibner (May. 2023 – Dec. 2023), undergraduate project research, ASU
- Hung Nguyen (Jan. 2023 – May 2023), undergraduate project research, ASU
- Maximus Smith (Sep. 2022 – May 2023), two undergraduate honors projects, ASU
- Srinidhi Budhiraju (Sep. 2022 – Dec. 2022), undergraduate honors project, ASU
- Austin Crisenbery, (Sep. 2020 – May 2022), NSF LEAP Scholar, undergraduate research project, ASU
- Kristian Dolgier (May 2020 – May 2021), undergraduate honors thesis project, ASU
- Reid Baker (Aug. 2018 – May 2019), undergraduate research, ASU

- Haoyu Hu (Jul. 2015 – Aug. 2015), exchange student from the University of Science and Technology of China, undergraduate summer research experience, ASU
- Yingchao Lu (Jul. 2014 – Aug. 2014), exchange student from the University of Science and Technology of China, undergraduate summer research experience, ASU

Undergraduate student mentoring at Western Illinois University

- J. E. Brown (Aug. 2007 – May 2008), undergraduate research, Western Illinois University
- N. M. Buckner (Aug. 2006 – May 2007), undergraduate research, Western Illinois University

Student mentoring at J. W. Goethe-University

- J. Noronha-Hostler (2006 – 2010), J. W. Goethe-University, Frankfurt am Main, Germany
- B. Sad (2006 – 2007), J. W. Goethe-University, Frankfurt am Main, Germany
- J. Noronha (2006 – 2007), J. W. Goethe-University, Frankfurt am Main, Germany
- A. Schmitt (2004 – 2006), J. W. Goethe-University, Frankfurt am Main, Germany
- S. Rüster (2003 – 2006), J. W. Goethe-University, Frankfurt am Main, Germany
- M. Hanauske (2002 – 2003), J. W. Goethe-University, Frankfurt am Main, Germany

Teaching experience

2008-present: Arizona State University, Polytechnic Campus, Mesa, AZ

- PHY 112 - *General Physics (Electricity and Magnetism)*
- PHY 113 - *General Physics Laboratory (Mechanics)*
- PHY 121 - *University Physics I: Mechanics*
- PHY 201 - *Mathematical Methods in Physics I* (in-person, hybrid, and Sync)
- PHY 302 - *Mathematical Methods in Physics II* (in-person, hybrid, and Sync)
- PHY 331 - *Principles of Modern Electromagnetism* (in-person, hybrid, and Sync)
- PHY 361 - *Introductory Modern Physics* (in-person, hybrid, and Sync)

2006-2008: Western Illlinois University, Macomb, IL

- PHYS 101Y - *Introduction to Astronomy* (a first-year experience course)
- PHYS 560 - *Topics in Solid State Physics*
- PHYS 540 - *Introduction to Particle and Nuclear Physics*
- PHYS 410G - *MATHEMATICA for Physics*
- PHYS 510 - *Classical Mechanics II*
- PHYS 421G/520 - *Electricity & Magnetism II*

Administrative experience

- *Faculty Head of Polytechnic Science & Mathematics*, School of Applied Sciences and Arts, College of Integrative Sciences and Arts (Jul. 2023–now)

University service at ASU

- *College Personnel Committee for Tenured and Tenure-Track Faculty*, College of Integrative Science and Arts, Co-Chair (2022–2023)
- *Search Committee for the inaugural Director of the School of Applied Sciences and Arts*, College of Integrative Science and Arts, Chair (Spring 2023)
- *ad-hoc Unit Personnel Committee* (one P&T case), Science and Mathematics Faculty, College of Integrative Sciences and Arts, Chair (Fall 2022)
- *Panelist at "University Promotion & Tenure" Panel Discussion,* organized by the ASU Faculty Women's Association, February 16, 2022
- *University hearing board*, Office of the University Provost, Member (Spring 2021)
- *Search Committee for the dean of the College of Integrative Science and Arts*, Member (Fall 2020 – Spring 2021)
- *Applied Physics Lecturer Search Committee*, College of Integrative Sciences and Arts, Member (Spring 2021)
- *Panelist at "University Promotion & Tenure Panel Discussion,"* organized by the ASU Faculty Women's Association, January 27, 2021
- *University Promotion and Tenure Committee*, Member (2017–2020)
- *ad-hoc Unit Personnel Committee* (one P&T case), Science and Mathematics Faculty, College of Integrative Sciences and Arts, Chair (2020)
- *ad-hoc Unit Personnel Committee* (two P&T cases), Science and Mathematics Faculty, College of Integrative Sciences and Arts, Chair & co-Chair (2019)
- *University Senate*, President-Elect (2016–2017), President (2017–2018), and Past-President (2018–2019) of the Polytechnic Campus Assembly
- *ad-hoc Unit Personnel Committee* (one P&T case), Science and Mathematics Faculty, College of Integrative Sciences and Arts, Chair (2018)
- *Faculty Head Search Committee*, College of Integrative Sciences and Arts, Member (2017–2018)
- *University Services and Facilities Senate Committee*, Member (2016–2018)
- *Physics Lecturer Search Committee*, College of Integrative Sciences and Arts, Member (2017)
- *Review of University Committees Ad-Hoc Senate Committee*, Member (2016–2017)
- *Faculty Head Search Committee*, College of Integrative Sciences and Arts, Member (2016–2017)
- Interim *Physics Program Lead*, Science and Mathematics Faculty, College of Letters and Sciences (Spring 2016)
- *University Undergraduate Standards Committee*, ASU, Member (2013–2015)

- *Unit Personnel Committee* (annual evaluations of contract faculty), Science and Mathematics Faculty, College of Letters and Sciences, Member (2012) and Chair (2013–2015)
- *Major in Applied Physics Committee*, Science and Mathematics Faculty, College of Letters and Sciences, Member (2015)
- *Physics Instructor Search Committee*, Science and Mathematics Faculty, College of Letters and Sciences, Chair (2014), Member (2015)
- *ad-hoc Unit Personnel Committee* (three P&T cases), Science and Mathematics Faculty, School of Letters and Sciences, Co-chair (2013)
- *Faculty review committee* (1 faculty promotion case), Science and Mathematics Faculty, School of Letters and Sciences, Member (2013)
- *Assistant Professor Search Committee* (tenure-track faculty position in microbiology), Science and Mathematics Faculty, School of Letters and Sciences, Member (2013)
- *Science and Mathematics Seminar organizer*, Science and Mathematics Faculty, School of Letters and Sciences, Chair (2013–2014)
- *Minor in Physics Committee*, Science and Mathematics Faculty, School of Letters and Sciences, Member (2013)
- *Committee on Research*, College of Technology & Innovation, Member (2011–2012)
- *Alternative Energy Task Force*, College of Technology & Innovation, Member (2011–2012)
- *Evaluator of physics instructional specialists*, Department of Applied Science & Mathematics (2009–2012)
- *Applied Science Seminar Committee*, Department of Applied Science & Mathematics, Member (2008–2012)
- *Minor in Physics Committee*, Department of Applied Science & Mathematics, Member (2010–2012)
- *Bylaws Committee*, Department of Applied Science & Mathematics, Member (2010–2012)
- *Awards Committee*, Department of Applied Science & Mathematics, Member (2009–2011)

Professional service

- 2024 – present, **Co-organizer** and **co-host** of ASU-AUST-USTC (AAU) online Theoretical Physics Colloquium series
- Spring 2023, **Grant Review Panelist**, National Science Foundation
- 2022 – present, **Editorial Board Member** of *Particles*, an international, open access, peer-reviewed journal covering nuclear physics, particle physics and astrophysics
- 2020 – 2023: **Creator**, **organizer**, and **host** of the *Theoretical Physics Colloquium* series with the dedicated *YouTube channel*. The series is featured by ECT*
- **Co-organizer** (together with A. Cherman, L. Fidkowski, and S. Sen) of the (in-person) workshop "Topological Phases of Matter: from low to high energy" (INT-21-1a) at the Institute for Nuclear Theory, Seattle, WA, March 6-10, 2023.
- **Proposer** and **co-organizer** (together with A. Cherman, L. Fidkowski, and S. Sen) of the (online) program "*Topological Phases of Matter: from low to high energy*" (INT-21-1a) at the Institute for Nuclear Theory, Seattle, WA, March 1-19, 2021.

- **Convener** of the *Workshop on Lattice Field Theory and Condensed Matter Physics*, which was part of the International Conference on New Frontiers in Physics (ICNFP 2020 & ICNFP 2021), Crete, August 23 – September 2, 2021
- Member of the **advisory committee** and a session **discussion leader**, the XXXII International (online) Workshop on High Energy Physics "*Hot problems of Strong Interactions*", Protvino, Russia, November 9-13, 2020
- **Referee** for Physical Review Letters, Physical Review B/C/D, Physics Letters B, Nuclear Physics A/B, and others.
- Member of the **Expert Committee** for evaluating applications for two tenured Associate Professor positions at the University of Stavanger, Norway (2017)
- **Organizer** (together with Cicilia Lunardini) of a series of mini-workshops on Neutron Stars and Neutrinos held at Arizona State University, Tempe, AZ (2009-2012)
- **Proposer** (together with D. Kharzeev, G. Semenoff, and A. Tsvelik) and **Lead Organizer** of an inter-disciplinary workshop "Relativistic dynamics of graphene" at the National Institute for Nuclear Theory, Seattle, WA, January 8–11, 2008
- **Reviewer** of grant proposals for (i) *Department of Energy*, (ii) *National Science Foundation*, (iii) *United States-Israel Binational Science Foundation*, (iv) *Israel Science Foundation*, (v) *Megagrants Program* of the Ministry of Education and Science of the Russian Federation, and (vi) *National Fund for Scientific and Technological Development* (FONDECYT), Chile

PUBLICATIONS

(Links to publication lists on the web: INSPIRE, arXiv, ADS, Web of Science, Google Scholar)

Book

1. *Electronic Properties of Dirac and Weyl Semimetals*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, ISBN: 978-981-120-734-1, DOI: 10.1142/11475 (World Scientific, Singapore, 2021)

Reviews & book chapters

2. *Anomalous plasma: chiral magnetic effect and all that*, Igor A. Shovkovy, `arXiv:2111.11416`, published in *Peter Suranyi 87th Birthday Festschrift: A Life in Quantum Field Theory*, edited by P. Argyres, G. Dunne, G. Semenoff, and R. Wijewardhana, (World Scientific, Singapore, 2022) pp. 291-316.
3. *Anomalous transport properties of Dirac and Weyl semimetals (Review Article)*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, `arXiv:1712.08947 [cond-mat.str-el]`, published in a Special Issue "*To the 90th birthday of A. A. Abrikosov*", edited by A. A. Varlamov, Yu. A. Kolesnichenko, V. M. Loktev, Low Temp. Phys. **44**, 487-505 (2018) [Fizika Nizkikh Temperatur **44**, 635-657 (2018)].
4. *Quantum field theory in a magnetic field: From quantum chromodynamics to graphene and Dirac semimetals*, V. A. Miransky and I. A. Shovkovy, `arXiv:1503.00732 [hep-ph]`, Physics Reports **576**, 1-209 (2015).

5. *Magnetic catalysis: A review*, I. A. Shovkovy, `arXiv:1207.5081 [hep-ph]`, published in "*Strongly interacting matter in magnetic fields*", edited by D. Kharzeev, K. Landsteiner, A. Schmitt, H.-U. Yee. Lect. Notes Phys. **871** (Springer, Berlin, 2013) pp. 13-49.
6. *Edge states in quantum Hall effect in graphene (Review Article)*, V. P. Gusynin, V. A. Miransky, S. G. Sharapov and I. A. Shovkovy, Low Temp. Phys. **34**, 778-789 (2008) [Fizika Nizkikh Temperatur **34**, 993-1006 (2008)].
7. *Phase diagram of neutral quark matter at moderate densities (Chapter 3)*, S. B. Rüster, V. Werth, M. Buballa, I. A. Shovkovy and D. H. Rischke, `nucl-th/0602018`, in *Pairing in fermionic systems: basic concepts and modern applications*, Series on Advances in Quantum Many-Body Theory – Vol. 8 (World Scientific, Singapore 2006), pp. 63-89.
8. *Two lectures on color superconductivity*, I. A. Shovkovy, `nucl-th/0410091`, Found. Phys. **35**, 1309 (2005); abridged version published in *Hot points in astrophysics and cosmology*, (Joint Institute for Nuclear Research, Dubna, 2005), pp. 260-314.
9. *Surprises in nonperturbative dynamics in σ-model at finite density*, V. P. Gusynin, V. A. Miransky and I. A. Shovkovy, `hep-ph/0406219`, Mod. Phys. Lett. A **19**, 1341 (2004) (Brief Review).

Refereed articles

10. *Neutrino energy and momentum emission from magnetized dense quark matter*, R. Ghosh and I. A. Shovkovy, `arXiv:2501.03318`, J. High Energy Phys. (2025), to appear.
11. *Anisotropic charge transport in strongly magnetized relativistic matter*, R. Ghosh and I. A. Shovkovy, `arXiv:2407.13828`, Eur. Phys. J. C **84**, 1179 (2024).
12. *Circularly polarized photon emission from magnetized chiral plasmas*, X. Wang and I. A. Shovkovy, `arXiv:2407.06271`, Phys. Rev. D **110**, 116005 (2024).
13. *Electrical conductivity of hot relativistic plasma in a strong magnetic field*, R. Ghosh and I. A. Shovkovy, `arXiv:2404.01388`, Phys. Rev. D **110**, 096009 (2024).
14. *Fermion self-energy and damping rate in a hot magnetized plasma*, R. Ghosh and I. A. Shovkovy, `arXiv:2402.04307`, Phys. Rev. D **109**, 096018 (2024).
15. *Photon and dilepton emission anisotropy for a magnetized quark-gluon plasma*, X. Wang and I. A. Shovkovy, `arXiv:2307.07557`, Phys. Rev. D **109**, 056008 (2024).
16. *Scalar boson emission from a magnetized relativistic plasma*, J. Jaber-Urquiza and I. A. Shovkovy, `arXiv:2310.00050`, Phys. Rev. D **108**, 096009 (2023).
17. *Electromagnetic response in an expanding quark-gluon plasma*, I. A. Shovkovy, `arXiv:2210.00691`, Particles **5**, 442-450 (2022).
18. *Rate and ellipticity of dilepton production in magnetized quark-gluon plasma*, X. Wang and I. A. Shovkovy, `arXiv:2205.00276`, Phys. Rev. D **106**, 036014 (2022).
19. *Chiral anomalous processes in magnetospheres of pulsars and black holes*, E. V. Gorbar and I. A. Shovkovy, `arXiv:2110.11380`, Eur. Phys. J. C **82**, 625 (2022).
20. *Entropy wave instability in Dirac and Weyl semimetals*, P. O. Sukhachov, E. V. Gorbar, and I. A. Shovkovy, `arXiv:2106.11992`, Phys. Rev. Lett. **127**, 176602 (2021).
21. *Polarization tensor of magnetized quark-gluon plasma at nonzero baryon density*, X. Wang and I. A. Shovkovy, `arXiv:2106.09029`, Eur. Phys. J. C **81**, 901 (2021).

22. *Strong suppression of electron convection in Dirac and Weyl semimetals*, P. O. Sukhachov, E. V. Gorbar, and I. A. Shovkovy, arXiv:2103.15836, Phys. Rev. B **104**, L121113 (2021).
23. *Photon polarization tensor in a magnetized plasma: absorptive part*, X. Wang and I. Shovkovy, arXiv:2103.01967, Phys. Rev. D **104**, 056017 (2021).
24. *Ellipticity of photon emission from strongly magnetized hot QCD plasma*, X. Wang, I. A. Shovkovy, L. Yu, and M. Huang, arXiv:2006.16254, Phys. Rev. D **102**, 076010 (2020).
25. *Hydrodynamics of Fermi arcs: Bulk flow and surface collective modes*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1901.00006, Phys. Rev. B **99**, 155120 (2019).
26. *Hydrodynamic modes in magnetized chiral plasma with vorticity*, D. O. Rybalka, E. V. Gorbar, and I. A. Shovkovy, arXiv:1807.07608, Phys. Rev. D **99**, 016017 (2019).
27. *Inter-node superconductivity in strained Weyl semimetals*, P. O. Sukhachov, E. V. Gorbar, I. A. Shovkovy, and V. A. Miransky, arXiv:1809.00019, J. Phys.: Cond. Mat. **31**, 055602 (2019).
28. *Electronic properties of strained double-Weyl systems*, P. O. Sukhachov, E. V. Gorbar, I. A. Shovkovy, and V. A. Miransky, arXiv:1806.03302, Annalen der Physik (Berlin) **530**, 1800219 (2018).
29. *Non-Abelian properties of electron wavepackets in Dirac semimetals* A_3Bi *(*$A = Na, K, Rb$*)*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1805.03222, Phys. Rev. B **98**, 045203 (2018).
30. *Nonlocal transport in Weyl semimetals in hydrodynamic regime*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1804.01550, Phys. Rev. B **98**, 035121 (2018).
31. *Collective excitations in Weyl semimetals in the hydrodynamic regime*, P. O. Sukhachov, E. V. Gorbar, I. A. Shovkovy, and V. A. Miransky, arXiv:1802.10110, J. Phys.: Cond. Mat. **30**, 275601 (2018).
32. *Hydrodynamic electron flow in a Weyl semimetal slab: Role of Chern–Simons terms*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1802.07265, Phys. Rev. B **97**, 205119 (2018).
33. *Consistent hydrodynamic theory of chiral electrons in Weyl semimetals*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1712.01289 [cond-mat.str-el], Phys. Rev. B **97**, 121105(R) (2018).
34. *Anomalous thermoelectric phenomena in lattice models of multi-Weyl semimetals*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1708.04248 [cond-mat.mes-hall], Phys. Rev. B **96**, 155138 (2017).
35. *Chiral response in lattice models of Weyl materials*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1706.09419 [cond-mat.mes-hall], Phys. Rev. B **96**, 125123 (2017).
36. *Wigner function and kinetic phenomena for chiral plasma in a strong magnetic field*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1707.01105 [hep-ph], J. High Energy Phys. **08** (2017) 103.

37. *Origin of the Bardeen-Zumino current in lattice models of Weyl semimetals*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1706.02705 [cond-mat.mes-hall], Phys. Rev. B **96**, 085130 (2017).

38. *Pseudomagnetic lens as a valley and chirality splitter in Dirac and Weyl materials*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1703.03415 [cond-mat.mes-hall], Phys. Rev. B **95**, 241114(R) (2017).

39. *Second-order dissipative hydrodynamics for plasma with chiral asymmetry*, E. V. Gorbar, D. O. Rybalka, and I. A. Shovkovy, arXiv:1702.07791 [hep-th], Phys. Rev. D **95**, 096010 (2017).

40. *Second-order chiral kinetic theory: chiral magnetic and pseudomagnetic waves*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1702.02950 [cond-mat.mes-hall], Phys. Rev. B **95**, 205141 (2017).

41. *Consistent chiral kinetic theory in Weyl materials: chiral magnetic plasmons*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1610.07625 [cond-mat.str-el], Phys. Rev. Lett. **118**, 127601 (2017).

42. *Pseudomagnetic helicons*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1612.06397 [cond-mat.mes-hall], Phys. Rev. B **95**, 115422 (2017).

43. *Chiral magnetic plasmons in anomalous relativistic matter*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1611.05470 [cond-mat.mes-hall], Phys. Rev. B **95**, 115202 (2017).

44. *Anomaly-driven inverse cascade and inhomogeneities in a magnetized chiral plasma in the early Universe*, E. V. Gorbar, I. Rudenok, I. A. Shovkovy, and S. Vilchinskii, arXiv:1610.01214 [hep-ph], Phys. Rev. D **94**, 103528 (2016).

45. *Electrified magnetic catalysis in 3D topological insulators*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1607.04649 [cond-mat.mes-hall], Phys. Rev. B **94**, 115429 (2016).

46. *Origin of dissipative Fermi arc transport in Weyl semimetals*, E. V. Gorbar, V. A. Miransky, I. A. Shovkovy, and P. O. Sukhachov, arXiv:1603.06004 [cond-mat.mes-hall], Phys. Rev. B **93**, 235127 (2016).

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33. *Derivative expansion of the one loop effective action in QED*, I. A. Shovkovy, `hep-th/9902019`. Published in "*Trends in Mathematical Physics*", edited by V. Alexiades and G. Siopsis (AMS/International Press, Cambridge MA, 1999) pp. 467-474.
34. *Chiral symmetry breaking in the weakly coupled QED in a magnetic field*, I. A. Shovkovy, `hep-ph/9709340`. Published in "*Highlights of subnuclear physics: 50 years later*", edited by A. Zichichi (World Scientific, Singapore, 1999) pp. 602-609.
35. *Mass generation in the supersymmetric Nambu–Jona-Lasinio Model in an external magnetic field*, I. A. Shovkovy, `hep-th/9703116`, published in "*Supersymmetry and quantum field theory: proceedings of the D. Volkov Memorial Seminar*", edited by J. Wess and V.P. Akulov (Springer, 1998) pp. 182-186.

PRESENTATIONS

Mass media

1. Episode of Scientific Sense Podcast with Gill Eapen, Feb. 26, 2021
2. Expert comments for "Superconductivity from nowhere" by Jon Cartwright, published at `physicsworld.com`, a website from the Institute of Physics, March 29, 2011
3. Invited introduction to the Public Broadcasting Service (PBS) NOVA feature program "Monster of the Milky Way", aired on WMEC-TV and other stations of Network Knowledge by public television for Central and Western Illinois (7 p.m. CST, October 31, 2006)

Invited conference talks

1. *Charge Transport in Magnetized Plasma from First Principles*, invited talk at the ECT* workshop on Holographic perspectives on chiral transport and spin dynamics, ECT*, Trento, Italy, March 28, 2025
2. *Chiral Anomalous Effects: From Semimetals to Quark-Gluon Plasma* (part 1 & part 2), invited lectures at the workshop Topological quantum Matter: Foundations and applications, National Autonomus University of Mexico, Mexico City, Mexico, January 20-22, 2025
3. *Charge transport in strongly magnetized relativistic matter*, invited talk at the 8th International Conference on Chirality, Vorticity and Magnetic Field in Quantum Matter, West University of Timisoara, Timisoara, Romania, July 25, 2024
4. *Anomalous chiral transport in nuclear physics and beyond*, invited talk at the Workshop on *Chirality and Vorticity Effects from Nuclear Systems to Condensed Matter*, as part of the 2023 Joint APS/JPS Meeting, Maui, Hawaii, November 26, 2023
5. *Anomalous effects in chiral plasmas*, invited talk at *Gravity, Fields, and Strings in Honour of the 70th birthday of Professor Gordon Semenoff*, University of Montreal, Canada, July 28, 2023
6. *Anomalous effects in the magnetar magnetospheres* (video), invited blackboard talk at the program *The Many Faces of Relativistic Fluid Dynamics*, KITP, University of California, Santa Barbara, June 15, 2023
7. *Chiral plasma instability in the magnetosphere of magnetars* (video), invited talk at the International Workshop on *Electromagnetic Effects in Strongly Interacting Matter*, ICTP South American Institute for Fundamental Research, Sao Paulo, Brazil, October 27, 2022

8. *Relativistic-like electron hydrodynamics in Dirac semimetals*, invited HYDRO22 colloquium at the International Workshop on *Emergent Hydrodynamics in Condensed Matter and High-Energy Physics*, Max Planck Institute for the Physics of Complex Systems, Dresden, Germany, May 2, 2022
9. *Anomalous phenomena in Dirac and Weyl semimetals*, invited (remote) talk at the 6th International Conference on *Chirality, Vorticity and Magnetic Field in Heavy Ion Collisions* (hybrid meeting), Stony Brook University, Stony Brook, NY, November 3, 2021
10. *Riding the wave of relativistic-like hydrodynamics*, invited talk at the online workshop on *"Topological Aspects of Strong Correlations and Gauge Theories"*, International Centre for Theoretical Sciences (ICTS) of the Tata Institute of Fundamental Research, Bangalore, India, September 9, 2021
11. *Relativistic-like hydrodynamics: Catching the flow*, invited talk at the 2021 Summer program *"From Chaos to Hydrodynamics in Quantum Matter"*, Aspen Center for Physics, Aspen, CO, September 1, 2021
12. *Chiral anomalous effects in QGP*, invited mini-course (two online lectures) at the *XX Jorge André Swieca Summer School in Theoretical Nuclear Physics*, Brazilian Physical Society, February 8-10, 2021
13. *Photon emission from strongly magnetized QGP*, invited online talk at the *XX Jorge André Swieca Summer School in Theoretical Nuclear Physics*, Brazilian Physical Society, February 12, 2021
14. *Chiral kinetic theory: applications to semimetals*, virtual INT program *"Chirality and Criticality: Novel Phenomena in Heavy-Ion Collisions"*, Institute for Nuclear Theory, University of Washington, Seattle, May 19, 2020
15. *Applications of chiral kinetic theory in Dirac and Weyl semimetals*, workshop on *Quantum kinetic theories in magnetic and vortical fields*, Yukawa Institute for Theoretical Physics, Kyoto University, Japan, December 9, 2019
16. *Dimensional reduction and catalysis of dynamical symmetry breaking by a magnetic field*, workshop on *Physics Opportunities at a Lepton Collider in the Fully Nonperturbative QED Regime*, SLAC National Accelerator Laboratory, Menlo Park, CA, August 7, 2019
17. *Downfall of chiral magnetic wave*, Nordita scientific program *"Effective Theories of Quantum Phases of Matter"*, Nordita, Stockholm, Sweden, May 6, 2019
18. *Chiral plasmas: from cosmology to technology*, workshop on *"Recent Developments in Chiral Matter and Topology"*, Center for Theoretical Physics, National Taiwan University, Taipei, Taiwan, December 6-9, 2018
19. *Hydrodynamic modes in magnetized chiral plasma with vorticity*, Nordita scientific program *"Quantum Anomalies and Chiral Magnetic Phenomena"*, Nordita, Stockholm, Sweden, October 8, 2018
20. *Anomalous chiral matter: from QCD to condensed matter*, the *XIIIth Quark Confinement and the Hadron Spectrum* conference, Maynooth University, Ireland, August 1-6, 2018
21. *Hydrodynamic modes in charged chiral plasmas with vorticity*, workshop on *"Open Problems and Opportunities in Chiral Fluids"*, Santa Fe, NM, July 17-19, 2018

22. A series of three lectures on *Magnetic catalysis in QCD in a superstrong magnetic field*, the *XIV International Workshop on Hadron Physics*, Florianópolis, Brazil, March 18-23, 2018
23. *Quasi-relativistic systems in a strong magnetic field*, conference on *Nonperturbative QFT and Loewe's 65 Fest*, Santiago, Chile, December 5-7, 2017
24. *Chiral effects in strong magnetic backgrounds: from QCD to condensed matter physics*, the 15th International Conference on *QCD in Extreme Conditions (XQCD 2017)*, Pisa, Italy, June 26-28, 2017
25. A series of six lectures on *magnetic catalysis, QCD in strong magnetic fields*, *graphene, and and Dirac & Weyl materials*, Summer School on *Frontiers in Theoretical Physics and the sixth Huada School on QCD*, Wuhan, China, May 29-June 2, 2017
26. *Physics of strong magnetic field*, KEK theory center workshop on *Hadron and Nuclear Physics in 2017* (KEK-HN-2017), KEK, Tsukuba, Japan, January 7-10, 2017
27. *Chiral matter in magnetic field*, RIKEN workshop *Chiral matter: from quarks to Dirac semimetals*, RIKEN, Wako, Japan, December 5-8, 2016
28. *Anomalous chiral plasmas: from Dirac semimetals to cosmology*, mini-workshop *Condensed matter physics meets relativistic quantum field theory*, Laboratory of Mathematical and Theoretical Physics, University of Tours, Tours, France, June 13-15, 2016
29. *Anomalous chiral plasma: finite size and inhomogeneity effects*, workshop on *Magnetic Fields in Hadron Physics*, ICTP South American Institute for Fundamental Research, Sao Paulo, Brazil, May 9-13, 2016
30. *Anomaly-driven chiral magnetic effects*, the 1st CORE-U International Conference: *Intense Fields and Extreme Universe*, Hiroshima University, Higashi-Hiroshima, Japan, March 7-8, 2016
31. *Chirality in magnetized relativistic plasma*, workshop on *Magnetic Fields in Strongly Interacting Matter*, Utrecht University, Netherlands, November 20-23, 2015
32. *Magnetism and chirality in QCD*, KITPC program *"sQGP and Extreme QCD,"* Kavli Institute for Theoretical Physics China at the Chinese Academy of Sciences, Beijing, China, May 12, 2015
33. *Chiral asymmetry in magnetized stellar matter*, workshop on *Quarks and Compact Stars*, Kavli Institute for Astronomy and Astrophysics at Peking University, Beijing, China, October 20-22, 2014
34. *Chiral asymmetry: A remarkable form of magnetization in relativistic matter*, the 2nd workshop on *QCD vacuum and matter under strong magnetic field*, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China, October 15-17, 2014
35. *Universal magnetic catalysis: from Quantum Chromodynamics to Dirac semimetals*, *Low Energy Challenges for High Energy Physicists* conference, Perimeter Institute for Theoretical Physics, ON, Canada, May 26-30, 2014
36. *Chiral separation effect: from high energy to Dirac and Weyl semimetals*, workshop on *Effective Field Theories for Quantum Many-Body Systems*, Instituto de Fisica Teorica, Universidad Autonoma de Madrid, Madrid, Spain, January 15-17, 2014
37. *Radiative corrections to chiral separation effect*, the 10th biannual workshop *Continuous Advances in QCD (CAQCD_2013)*, Minneapolis, MN, May 16-19, 2013

38. *Many facets of magnetic catalysis*, mini-workshop on *QCD vacuum and matter under strong magnetic field*, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China, April 29-30, 2013
39. *Radiative corrections to chiral separation effect in QED*, mini-workshop on *QCD vacuum and matter under strong magnetic field*, Institute of High Energy Physics, Chinese Academy of Sciences, Beijing, China, April 29-30, 2013
40. *Magnetized vacuum and matter: from magnetic catalysis to chiral asymmetry*, workshop on *QCD in strong magnetic fields*, ECT*, Trento, Italy, November 12-16, 2012
41. *Fast chemical equilibration via Hagedorn states in heavy ion collisions*, symposium on *contemporary nuclear physics (JoeFest)*, McGill University, Montreal, Canada, June 12-14, 2012
42. *Abnormal normal ground state of dense relativistic matter in a magnetic field*, workshop *New Frontiers in QCD 2010 – Exotic Hadron Systems and Dense Matter*, Yukawa Institute for Theoretical Physics, Kyoto, Japan, March 10, 2010
43. *Relativistic dynamics in graphene: Magnetic Catalysis & Quantum Hall Effect*, the XII Mexican workshop *on Particles and Fields*, Mazatlan, Mexico, November 9-14, 2009
44. *Transport Properties of Stellar Quark Matter*, workshop *Quark-gluon plasma meets cold atoms*, GSI, Darmstadt, Germany, September 25-27, 2008
45. *Magnetization of color-flavor-locked matter*, workshop *New Frontiers in QCD 2008 – Fundamental Problems in Hot and/or Dense Matter*, Yukawa Institute for Theoretical Physics, Kyoto, Japan, March 11, 2008
46. *What is the true ground state of dense QCD?* (Discussion session leader), workshop *New Frontiers in QCD 2008 – Fundamental Problems in Hot and/or Dense Matter*, Yukawa Institute for Theoretical Physics, Kyoto, Japan, March 3, 2008
47. *The quest for the ground state of cold dense quark matter*, International Conference on *Exotic States of Hot and Dense Matter and their Dual Description*, Perimeter Institute for Theoretical Physics, Waterloo, Ontario, Canada, May 22-25, 2007
48. *On recent advances and upsets in color superconductivity*, APCTP Focus Program *Search for Exotic State of Dense Matter*, POSTECH, Pohang, Korea, June 19-30, 2006
49. *Color superconductivity*, International Conference on *Strong & Electroweak Matter 2006*, Brookhaven National Laboratory, May 10-13, 2006
50. *Dense baryon matter: progress and difficulties*, workshop on *QCD at Finite Density*, ECT* Trento, Italy, March 21-25, 2006
51. *The many phases of color-superconducting quark matter*, *DESY Theory workshop*, Hamburg, Germany, September 28-30, 2005
52. *Neutrino trapping in a color superconductor*, workshop on *Pairing in Fermionic Systems: Beyond the BCS Theory*, Institute for Nuclear Theory, University of Washington, Seattle, September 19-23, 2005
53. *Color superconductivity in dense quark matter*, workshop on *Extreme QCD*, University of Wales Swansea, Swansea, August 2-5, 2005
54. *QCD phase diagram*, workshop on *Exploring the Phase Diagram of Strongly Interacting Matter*, State University of New York at Stony Brook, November 16-17, 2004

55. *Gapless phases of color superconducting matter*, The 8th International Conference on *Strangeness in Quark Matter* (SQM 2004), Cape Town, South Africa, September 15-20, 2004
56. *Phases of high baryon density QCD*, The 4th Biennial Meeting of the *International Association for Relativistic Dynamics*, Saas Fee, Switzerland, June 12-19, 2004
57. *Theory of gapless superconductivity in quark matter*, NATO Advanced Study Institute *Structure and Dynamics of Elementary Matter*, Kemer, Turkey, September 22-October 2, 2003
58. *Gapless color superconductivity in quark matter*, miniworkshop *Aspects of nonperturbative QCD: hadrons and thermodynamics*, Rostock, Germany, July 14-15, 2003
59. *Speculations about cooling of compact stars*, workshop *Strong Coupling Gauge Theories and Effective Field Theories*, Nagoya, Japan, December 10-13, 2002
60. *Quark color superconductivity and the cooling of compact stars*, *Continuous Advances in QCD 2002/Arkadyfest*, Minneapolis, MN 55455, May 17-23, 2002
61. *Collective modes in color superconducting matter*, The 6th International Conference on *Strangeness Quarks in Matter* (SQM 2001), Frankfurt am Main, Germany, September 24-29, 2001
62. *Collective modes in color superconducting matter*, The 5th workshop on *Quantum Field Theory under the Influence of External Conditions*, University of Leipzig, Germany, September 10-14, 2001
63. *Chiral symmetry breaking in weakly coupled QED in a magnetic field*, workshop on Mathematical Physics: *Today, Priority Technologies – for Tomorrow*, Kyiv, Ukraine, May 12-17, 1997

Contributed conference talks

1. *Anisotropic emission from magnetized quark-gluon plasma* (in person), the XVth international conference on *Strong and Electro-Weak Matter 2022* (SEWM 2022), Saclay & Paris, France, June 21, 2022
2. *Dilepton emission from magnetized quark-gluon plasma* (online talk), international workshop *FunQCD22: from first principles to effective theories*, Valencia, Spain, June 13, 2022
3. *Chiral anomaly effects in pulsar magnetospheres* (online talk), *APS April Meeting*, New York, NY, April 9, 2022
4. *Electromagnetic probes of strongly magnetized quark-gluon plasma*, virtual *2021 Fall Meeting of the Division of Nuclear Physics of the American Physical Society*, October 13, 2021
5. *Photon emission from strongly magnetized QCD plasma*, virtual *APS April Meeting*, April 20, 2021
6. *Anisotropic photon emission from magnetized QGP*, virtual workshop *FunQCD: from first principles to effective theories*, April 1, 2021
7. *Collective modes in chiral relativistic plasmas*, the *16th International Conference on QCD in Extreme Conditions (XQCD 2018)*, Frankfurt, Germany, May 21-23, 2018
8. *Anomalous inhomogeneous chiral plasma*, the 2nd QCD workshop on *Chirality, Vorticity and Magnetic Field in Heavy Ion Collisions*, University of California, Los Angeles, CA, February 23-26, 2016

9. *Chiral shift in renormalizable theories in magnetic field*, RIKEN-BNL workshop on *"P- and CP-odd Effects in Hot and Dense Matter"*, Brookhaven National Laboratory, Upton, NY, USA, June 25-27, 2012
10. *Magnetized dense relativistic matter*, the *11th Conference on the Intersections of Particle and Nuclear Physics* (CIPANP 2012), St. Petersburg, FL, USA, May 29-June 3, 2012
11. *Chiral asymmetry and axial anomaly in magnetized relativistic matter*, the *19th Particles and Nuclei International Conference* (PANIC11), Massachusetts Institute of Technology, Cambridge, MA, July 24-29, 2011
12. *Dynamics in the normal ground state of dense relativistic matter in magnetic field*, *APS April Meeting*, Anaheim, CA, April 30-May 3, 2011
13. *Magnetic catalysis and chiral shift in dense matter*, the IXth international conference on *Strong and Electro-Weak Matter 2010* (SEWM 2010), McGill University, Montreal, Canada, June 29-July 2, 2010
14. *Chiral shift in dense relativistic matter in magnetic field*, the *XII Mexican workshop on Particles and Fields*, Mazatlan, Mexico, November 9-14, 2009
15. *Chiral shift at Fermi surface of dense relativistic matter in magnetic field*, *Bogolyubov Kyiv Conference Modern Problems of Theoretical and Mathematical Physics*, Kyiv, Ukraine, September 15-18, 2009
16. *Chiral asymmetry in relativistic matter in a magnetic field*, the *10th Conference on the Intersections of Particle and Nuclear Physics* (CIPANP 2009), San Diego, CA, USA, May 26-31, 2009
17. *Surprises in dense relativistic matter in a magnetic field*, *Mini-workshop on Neutron Stars and Neutrinos*, Arizona State University, Tempe, USA, April 15-16, 2009
18. *Bulk viscosity in dense quark matter*, *Vic Elias Memorial Conference*, University of Western Ontario, London, Ontario, Canada, May 28-30, 2007
19. *Bulk viscosity of strange quark matter*, mini-workshop on *Color Superconductivity*, Washington University, St. Louis, USA, March 29, 2007
20. *Transport properties of color superconductors*, the *19th Annual Midwest Nuclear Theory Get-Together*, Argonne National Laboratory, October 13-14, 2006
21. *Phase diagram of dense QCD with and without neutrino trapping*, *Neutron Stars at the Crossroads of Fundamental Physics*, Vancouver, Canada, August 9-13, 2005
22. *New mechanism for pulsar kicks powered by color superconductivity*, *QCD@Work 2005*, workshop on QCD Theory and Experiment, Conversano, Italy, June 16-20, 2005
23. *Compact stars as a laboratory of gapless superconductivity*, presentation at the collaboration meeting of Virtual Institute and Research Training Network Initiative, Darmstadt, Germany, October 22-23, 2004
24. [‡]*Color superconductivity and compact stars*, (Lecture 1: *Introduction into color superconductivity* & Lecture 2: *Color superconductivity in neutral matter*), International Summer School and Workshop on *Hot points in astrophysics and cosmology*, Bogoliubov Laboratory of Theoretical Physics, Joint Institute for Nuclear Research, Dubna, Russia, August 2-13, 2004

[‡] Voted "Best Lecturer" of the school.

25. *Gluon puzzle of gapless superconductivity*, INT-04-1 program "QCD and Dense Matter: From Lattices to Stars", Institute for Nuclear Theory, University of Washington, Seattle, WA, USA, May 28, 2004
26. *Stable gapless color superconducting phases of dense quark matter*, Nuclear Physics Spring Meeting, Cologne, Germany, March 8-12, 2004
27. *Gapless superconductivity – from quark matter to atomic gases*, Symposium of the Frankfurt Institute for Advanced Studies, Frankfurt am Main, Germany, February 25, 2004
28. *Color superconductivity and compact stars*, QCD@Work 2003, workshop on QCD Theory and Experiment, Conversano, Italy, June 14-18, 2003
29. *Thermal rates for baryon and anti-baryon production*, Seventh workshop on Quantum Chromodynamics, Villefranche-sur-Mer, France, January 6-10, 2003
30. *Quark stars and their cooling*, workshop *Strong and Electroweak Matter 2002*, Heidelberg, Germany, October 2-5, 2002
31. *The effect of color superconductivity on the cooling rate of quark stars*, DPF2002: Meeting of the Division of Particles and Fields, College of William & Mary, Williamsburg, May 24-28, 2002
32. *Collective modes in color superconducting matter*, International Conference on STATISTICAL QCD, ZiF, Bielefeld University, Germany, August 26-30, 2001
33. *The diquark pseudo-Nambu-Goldstone bosons in the color superconducting phase*, Mini-workshop on *Heavy Ion Reaction Dynamics*, University of Minnesota, Minneapolis, November 6-7, 2000
34. *The spectrum of diquark composites in cold dense QCD*, DPF2000: Meeting of The Division of Particles and Fields, Ohio State University, Columbus, OH, August 9-12, 2000
35. [†]*Chiral symmetry breaking in weakly coupled QED in a magnetic field*, International School of Subnuclear Physics, 35th Course: *Highlights: 50 Years Later*, Erice, Italy, August 26-September 4, 1997
36. *Mass generation in the supersymmetric Nambu-Jona-Lasinio model in an external magnetic field*, D. Volkov Memorial Seminar *Supersymmetry and Quantum Field Theory*, Kharkiv, Ukraine, January 5-7, 1997
37. *Dynamical chiral symmetry breaking by a magnetic field in QED*, Second Ukrainian Conference of Young Scientists, T. Shevchenko Kyiv State University, Kyiv, Ukraine, May 16-18, 1995
38. *Dimensional reduction and dynamical chiral symmetry breaking by a magnetic field*, Scientific Session of the Bogolyubov Institute for Theoretical Physics, Kyiv, Ukraine, February 22-23, 1995

Seminars & colloquia

1. *Chiral anomalous effects in magnetars*, seminar at Interdisciplinary Center for Theoretical Study, University of Science and Technology of China, Hefei, June 21, 2024
2. *Radiant strongly magnetized relativistic plasmas*, seminar at Center for Theoretical Physics, Anhui University of Science and Technology, Huainan, June 20, 2024

[†] Voted "Best Theoretical Presentation" by a graduate student

3. *Scalar boson emission from a magnetized relativistic plasma*, seminar (remote), Latin American network on electromagnetic effects in strongly interacting matter, October 11, 2023
4. *Electromagnetic probes of magnetized quark-gluon plasma* (video), IFT Colloquium (in person), Instituto de Física Teórica - UNESP, Sao Paulo, Brazil, October 26, 2022
5. *Chiral anomalous bursts in pulsar magnetospheres*, nuclear physics seminar (in person), Department of Physics and Astronomy, Iowa State University, Ames, IA, September 22, 2022
6. *Chiral matter: From quark gluon plasma to topological semimetals*, physics colloquium (in person), Department of Physics, Indiana University Bloomington, IN, March 9, 2022
7. *Chiral anomalous magnetospheres of magnetars*, S@INT hybrid seminar (remote), Institute for Nuclear Theory, University of Washington, Seattle, WA, January 11, 2022
8. *Chiral anomalous plasma in magnetospheres of pulsars*, online QCD theory seminar hosted by KEK Japan, December 14, 2021
9. *Anomalous chiral matter and all that*, physics colloquium (remote), Universidade Estadual de Campinas (UNICAMP), Brazil, September 28, 2021
10. *Anomalous quark-gluon plasma*, physics colloquium (dual mode), Arizona State University, Tempe, AZ, September 23, 2021
11. *Anomalous physics of magnetized quark-gluon plasma*, physics colloquium (remote), Physics Department, University of Arizona, Tucson, AZ, March 19, 2021
12. *Direct photons from magnetized quark-gluon plasma*, theoretical physics seminar (remote), Sharif University of Technology, Tehran, Iran, August 18, 2020
13. *Dissipation of chiral magnetic wave*, theoretical physics seminar, J.W. Goethe University, Frankfurt am Main, Germany, May 14, 2019
14. *Collective modes in chiral plasmas with dynamical electromagnetism*, theoretical high-energy physics seminar, Institute of Physics, Academia Sinica, Taipei, Taiwan, December 13, 2018
15. *Anomalous chiral matter: from quark-gluon plasma to novel materials*, physics seminar, University of Stavanger, Norway, October 11, 2018
16. *Collective modes in chiral (pseudo)relativistic matter*, theoretical physics seminar, Institute of High Energy Physics, CAS, Beijing, June 8, 2017
17. *Transport properties of anomalous chiral plasmas*, nuclear theory seminar, J.W. Goethe University, Frankfurt am Main, Germany, June 10, 2016
18. *Many faces of chiral magnetic effects*, FIAS colloquium, Frankfurt Institute for Advanced Studies, Frankfurt am Main, Germany, June 9, 2016
19. *Generalized Landau-level representation for spin-1/2 fermions and its applications*, nuclear physics seminar, Brookhaven National Laboratory, Upton, NY, July 31, 2015
20. *Research at the tip of a pencil*, Science and Mathematics seminar, College of Letters and Sciences, Arizona State University, Mesa, AZ, April 8, 2015
21. *Magnetized relativistic plasma as a Weyl metal*, nuclear physics seminar, Department of Physics, University of Maryland, College Park, MD, December 3, 2014
22. *Chiral asymmetry in condensed matter physics*, condensed matter physics seminar, Wuhan University, Wuhan, China, November 6, 2014

23. *Universal magnetic catalysis*, physics seminar, Huazhong University of Science and Technology, Wuhan, China, November 6, 2014
24. *Chiral effects in magnetized plasma*, high-energy physics seminar, Central China Normal University, Wuhan, China, November 5, 2014
25. *Magnetism and chirality in relativistic systems*, high-energy physics seminar, Department of Physics, Tsinghua University, Beijing, China, October 30, 2014
26. *Chiral separation effect: Theoretical challenges and applications*, theoretical physics seminar, Department of Physics, Pusan National University, Busan, South Korea, March 14, 2014
27. *Magnetic dance in a quantum world*, physics seminar, Nishina Center, RIKEN, Wako, Japan, March 5, 2014
28. *High-energy research at the tip of a pencil*, physics colloquium, Department of Physics, Kent State University, Kent, OH, January 30, 2014
29. *Chiral separation effect: recent developments*, physics seminar, Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, Kyiv, Ukraine, June 10, 2013
30. *Radiative corrections to chiral separation effect in QED*, physics seminar, Department of Modern Physics, University of Science and Technology of China, Hefei, China, May 3, 2013
31. *Quantum magnetic world*, high-energy physics seminar, Institute of High Energy Physics, CAS, Beijing, China, April 26, 2013
32. *Relativistic matter in magnetic fields*, physics seminar, University of Texas at El Paso, USA, September 16, 2011
33. *Relativistic Dynamics and Spontaneous Symmetry Breaking in Graphene*, YITP physics colloquium, Yukawa Institute for Theoretical Physics, Kyoto, Japan, March 15, 2010
34. *Chiral asymmetry in relativistic matter in a magnetic field*, theoretical physics seminar, Vienna University of Technology, Vienna, Austria, July 9, 2009
35. *Chiral asymmetry in relativistic matter in a magnetic field*, nuclear theory seminar, J.W. Goethe University, Frankfurt am Main, Germany, July 16, 2009
36. *Neutron vs. Quark Stars*, seminar of the Cosmology Journal Club, Aizona State University, Tempe, AZ, April 21, 2009
37. *Graphene: Symmetry breaking in the carbon Flatland*, theoretical physics seminar, Arizona State University, Tempe, USA, October 13, 2008
38. *Graphene: Symmetry breaking in the carbon Flatland*, theoretical physics seminar, Washington University, St. Louis, USA, July 30, 2008
39. *Neutron stars, quark-gluon plasma, and graphene*, research seminar, Arizona State University, Mesa, USA, March 17, 2008
40. *Color-flavor locked superconductor in a magnetic field*, theoretical physics seminar, Washington University, St. Louis, USA, August 13, 2007
41. *Condensed quark matter*, theoretical physics seminar, University of Wales Swansea, Swansea, United Kingdom, June 20, 2007
42. *Exotic states of matter at the heart of neutron stars*, physics seminar, Arizona State University, Tempe, AZ, May 3, 2007

43. *Transport properties of color superconductors*, theoretical physics seminar, Washington University, St. Louis, USA, September 21, 2006

44. *Unconventional Cooper pairing in dense quark matter*, high-energy physics seminar, University of Cincinnati, Cincinnati, OH, May 16, 2006

45. *Introduction into color superconductivity*, theoretical physics seminar, Norwegian University of Science and Technology, Trondheim, Norway, April 26, 2006

46. *Unconventional Cooper pairing in dense quark matter*, theoretical physics seminar, University of Minnesota, Minneapolis, USA, April 17, 2006

47. *Quest for new states of matter in stars*, physics colloquium, Western Illinois University, Macomb, IL, March 10, 2006

48. *Cooper pairing under stress*, theoretical physics seminar, Washington University, St. Louis, USA, March 7, 2006

49. *Superconducting phases of quark matter*, theoretical physics seminar, University of Leipzig, Germany, January 19, 2006

50. Invited review talk and two lectures *on color superconductivity*, Max Planck Institute for Gravitational Physics (Albert Einstein Institute), Potsdam, Germany, November 1-3, 2005

51. *Color superconductivity*, theoretical physics seminar, Bielefeld University, Germany, October 27, 2005

52. *Towards phase diagram of neutral dense matter*, theoretical physics seminar, Massachusetts Institute of Technology, USA, May 10, 2005

53. *The current crisis in the understanding of QCD phase diagram*, theoretical physics seminar, Rockefeller University, USA, November 18, 2004

54. *On recent progress in color superconductivity*, theoretical physics seminar, Institute for Physics, Humboldt-University, Berlin, Germany, October 26, 2004

55. *Chromomagnetic instability in cold dense quark matter*, theoretical physics seminar, Bielefeld University, Germany, July 8, 2004

56. *Gapless superconductivity in dense quark matter*, theoretical physics seminar, Institute of Theoretical Physics, L'Ecole Polytechnique Fédérale de Lausanne, Lausanne, Switzerland, June 4, 2004

57. *Gapless superconductivity – from quark matter to atomic gases*, Physics Colloquium, Pontificia Universidad Católica de Chile, Santiago, Chile, March 18, 2004

58. *Gapless color superconductivity*, Nordita, Copenhagen, Denmark, February 17, 2004

59. *Spontaneous rotational symmetry breaking in gauged sigma-model*, nuclear theory seminar, J.W. Goethe-University, Frankfurt am Main, Germany, November 21, 2003

60. *Color superconductivity and compact stars*, nuclear theory seminar, Brookhaven National Laboratory, Upton, April 16, 2003;

61. *Color superconductivity and compact stars*, high-energy theory seminar, Universitry of Connecticut, Storrs, April 10, 2003;

62. *Color superconductivity and compact stars*, high-energy theory seminar, Perimeter Institute, Waterloo, Canada, April 3, 2003;

63. *Color superconductivity and compact stars*, high-energy theory seminar, University of Western Ontario, London, Canada, April 1, 2003
64. *New method for calculating thermal baryon-antibaryon production rates*, nuclear theory seminar, SUNY, Stony Brook, April 15, 2003
65. *Transport properties of color-flavor locked quark matter inside compact stars*, high-energy theory seminar, Instituto de Fisica Corpuscular, University of Valencia, Valencia, Spain, November 28, 2002
66. *Optically opaque color-flavor locked phase inside compact stars*, nuclear theory seminar, J.W. Goethe-University, Frankfurt am Main, Germany, November 8, 2002
67. *Cooling of quark stars*, presentation during the discussion on color superconductivity, Institute for Theoretical Physics, UCSB, Santa Barbara, CA, May 5, 2002
68. *Cold dense quark matter*, nuclear theory seminar, Jefferson Lab, February 11, 2002
69. *Exotic excitations in dense quark matter and the Anderson-Higgs mechanism*, high-energy physics seminar, Nordita/NBI, Denmark, October 1, 2001
70. *Microscopic approach to color superconductivity of dense quark matter*, nuclear physics seminar, Argonne National Laboratory, May 31, 2001
71. *Diquark pseudo-Nambu-Goldstone bosons in color superconducting quark matter*, high-energy physics seminar, Nagoya University, Japan, February 2, 2001
72. *Diquarks in the color superconducting phase of cold dense QCD*, high-energy physics seminar, University of Minnesota, September 28, 2000
73. *Diquarks in the color superconducting phase of cold dense QCD*, high-energy physics seminar, T-division, Los Alamos National Laboratory, July 21, 2000
74. *Gorkov type effective action in the color superconducting phase of cold dense QCD*, high-energy physics seminar, Department of Physics, University of Illinois at Chicago, March 6, 2000
75. *Gorkov type effective action in the color superconducting phase of cold dense QCD*, TNT colloquium, University of North Carolina, Chapel Hill, February 8, 2000
76. *The effective potential of the composite field in the color superconducting phase of QCD*, nuclear theory seminar, Lawrence Berkeley National Laboratory, January 20, 2000
77. *The effective potential of the composite field in the color superconducting phase of QCD*, nuclear theory seminar, Massachusetts Institute of Technology, January 6, 2000
78. *What is hot about cold dense quark matter?*, high-energy physics seminar, Institute of Theoretical Science, University of Oregon, January 18, 2000
79. *What is hot about cold dense quark matter?*, high-energy physics seminar, Physics Department, University of Cincinnati, November 8, 1999
80. *Some issues on color superconductivity in cold dense QCD*, high-energy physics seminar, Columbia University, November 15, 1999
81. *Some issues on color superconductivity in cold dense QCD*, nuclear theory seminar, State University of New York at Stony Brook, November 18, 1999
82. *Some issues on color superconductivity in cold dense QCD*, Nuclear Theory / RIKEN Seminar, Brookhaven National Laboratory, November 19, 1999

83. *Schwinger-Dyson approach to color superconductivity in dense QCD*, high-energy physics seminar, Physics Department, University of Cincinnati, May 25, 1999
84. *Magnetic catalysis and its potential role during electroweak phase transition*, high-energy physics seminar, Department of Physics, University of Illinois at Chicago, May 4, 1999
85. *Theory of chiral symmetry breaking by magnetic field in QED*, high-energy physics seminar, Department of Physics, Virginia Tech, February 26, 1999
86. *One-loop low-energy effective action in QED in 2+1 and 3+1 dimensions*, high-energy physics seminar, Department of Physics and Astronomy, University of British Columbia, July 6, 1998
87. *One-loop low-energy effective action in QED in 2+1 and 3+1 dimensions*, high-energy physics seminar, Physics Department, Purdue University, April 14, 1998
88. *One-loop low-energy effective action in QED in 2+1 and 3+1 dimensions*, high-energy physics seminar, HEP/Astro Seminar, Physics Department, Ohio State University, April 8, 1998
89. *Magnetic catalysis of chiral symmetry breaking*, high-energy physics seminar, Physics Department, University of Cincinnati, October 28, 1997
90. *Monopole condensation in N=1 supersymmetric model*, high-energy physics seminar, Department of Applied Mathematics, University of Western Ontario, October 17, 1996
91. *A dual description of supersymmetric models*, high-energy physics seminar, Department of Applied Mathematics, University of Western Ontario, June 19, 1996
92. *Instantons and SUSY*, high-energy physics seminar, Department of Applied Mathematics, University of Western Ontario, January 17 and January 31, 1996