

Curriculum Vitae

Personal Data:

Name: Seyed Akbar
Surname: Jafari
Nationality: Iranian
Gender: Male
Date of birth: Sept. 06, 1977
Marital status: Married, one daughter, one son
Languages: Persian (native), Turkish (native),
English (fluent, self-taught),
German (beginner, self-taught)
Arabic (fair)



Permanent address: Department of Physics,
Sharif University of Technology,
Tehran 11155-9161, Iran

Career:

Professor: Sharif Univ. of Tech., Nov. 2013-
Associate Professor: Sharif Univ. of Tech. (Dec. 2013 – Nov. 2013)
Assistant Professor: Sharif Univ. of Tech. (Sept. 2012 – Nov. 2013)
Assistant Professor* Sharif Univ. of Tech. (Sept. 2010 – Aug. 2012)
Assistant Professor: Isfahan Univ. of Tech. (Dec. 2006 – Aug. 2010)
Post Doc.: IMR, Tohoku University, Sendai, Japan (Nov. 2004 – Nov. 2006)
Leader: Professor Sadamichi Maeakwa
Subject: Theory of nonlinear optics in strongly correlated electron systems
PhD: Sharif University of Technology, Tehran, Iran (Jan. 2000 – Sept. 2004)
Supervisor: Professor Ganapathy Baskaran (IMSc, Chennai, India)
Subject: Spin physics of graphite
Diploma: The Abdus Salam ICTP, Trieste, Italy (Sept. 2001 – Sept. 2002)
BSc: Sharif University of Technology, Tehran, Iran (Sept. 1995 – Sept. 1999)

Research interests and experiences:

1. Alternative spacetime structures in the solid state physics
2. Dirac/Weyl materials and topological matter
3. Field theoretical and geometric methods in condensed matter physics
4. Spin models and spin liquids

* *Pending status:* For being outspoken against devastating policies of President M. Ahmadinejad, my recruitment procedure was pended for nearly two years by chancellor Prof. Dr. Reza Roustazad.

5. Computational electronic structure of correlated systems (DMFT, QMC, ED)
6. Interplay between disorder and interactions in solids
7. Nonlinear optics, interaction of light with strongly correlated electrons
8. Graphene, Borophene and other 2D materials

Awards, Fellowships, Extended visits:

1. Selected by Iran Science Elites Federation (ISEF) as class B scientist (ranked 50-100 in the country), 2020-2021
2. Selected as distinguished researcher in physics by the research deputy, Sharif University of Technology (2020)
3. Regular Associate Member of the Abdus Salam International Center for Theoretical Physics (ICTP), Trieste, Italy, 2020-2025
4. Selected by Iran Science Elites Federation (ISEF) as class A scientist (top 50 scientists in basic sciences) of Iran, 2019-2020
5. Visitor, Perimeter Institute, Waterloo, Canada, June 2019.
6. Visitor, MPI PKS, Dresden, Germany, July-September 2019.
7. Al-Biruni young scientist award, Iranian Academy of Science, 2016.
8. Tokyo University of Science President Award, Jan. 2015.
9. Alexander von Humboldt fellowship for experienced researchers, March 2014, (3+3+15 months extended visits) hosted by Prof. Dr. Juergen Koenig at Univ. Duisburg-Essen
10. Japan Society for the Promotion of Science (JSPS) Invitation Fellowship for Research in Japan, 2013.
11. Visiting Scientist, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan, June-August 2012.
12. IRR 150,000,000 (~US\$ 6,000) settling down grant, NEF of Iran, 2012.
13. Junior Associate Member, The Abdus Salam International Center for Theoretical Physics, Jan. 2004 – Dec. 2017.
14. Visiting Professor, International Collaboration Center, Institute for Materials Research, Tohoku University, Japan, Aug. 2011.
15. IRR 200,000,000 (~ US\$ 20,000) Grant for early career assistant professors, National Elite Foundation of Iran, 2008.
16. Visiting Scientist, Maekawa Laboratory, Institute for Materials Research, Tohoku University, Japan, Aug. 2008.
17. Young investigator award, Physical society of Iran, National Conference on superconductivity, 2008.
18. Appointed by the Minister of Science, Research and Technology of Iran, as Member of the referees committee, Youth Khawrizmi National Festival, 2004.
19. Japan Society for Promotion of Science (JSPS) post doctoral fellowship, 2004.
20. First rank, Youth Khawrizmi National Festival for outstanding PhD research in basic sciences, Ministry of Science, Research and Technology of Iran, Dec. 2003.
21. Sharif Univ. of Tech. fellowship for exceptional talents, Sept. 2003 – Sept. 2004.

22. Two fellowships from the Third World Academy of Science to visit the Institute of Mathematical Sciences (IMSc), Chennai, India (Dec. 2002, Jan. 2004).
23. Diploma thesis passed with honors, Abdus Salam ICTP, Trieste, Italy, Sept. 2002.
24. 3rd rank in national Olympiad of physics, Feb. 1998.
25. 28th rank, nationwide entrance exam of the state universities among about million high school students, 1995.

Research highlights in the media:

1. **SPINONICS**, American Institute of Physics ([AIP](#)) News July 2002
2. Iranian Students' News Agency ([ISNA](#)), 2003
3. **Magnetic frustration gives the honeycomb lattice aromatic characteristics**, Institute of Physics ([IOP Labtalk](#)), 2011
4. **Journal cover**, [Advanced Materials](#), Oct. 2011
5. **Mott-Heisenberg-Dirac physics in graphene**, [IOP Labtalk](#), 2012
6. **Universal aspects of Dirac fermions in nonlinear optics**, [IOP Labtalk](#), 2012
7. **Spin-orbit interactions versus Kekule structure**, [IOP Labtalk](#), 2014
8. Highlight in various local media for scientific achievements, such as Iranian Students News Agency, Physical Society of Iran, Duisburg University news.

Teaching Experience:

1. Modern condensed matter I, II (Graduate)
2. Advanced Quantum Mechanics I, II (Graduate)
3. Many-body quantum theory for condensed matter I, II (Graduate)
4. Mathematical Physics (Undergraduate)
5. Computational Physics, Hands on computer course (Undergraduate)
6. Introductory Solid State Physics I and II (Undergraduate)
7. Advanced Solid State Physics (Graduate) at Sharif and Duisburg
8. Statistical Physics (Graduate, Undergraduate)
9. General Physics I, Mechanics (Undergraduate)
10. Analytical Mechanics I, II (Undergraduate)

Mentoring, supervision and co-supervision

6 BSc students: all admitted to various graduate schools
19 MSc students: 17 admitted to various PhD programs
11 PhD students: 7 are faculty members in Iran, 4 are post docs
3 post docs: currently working with me

Publications summary

Journal Papers: 75 refereed papers, 5 arXiv preprints,
Conferences: 5 contributed talks, 11 invited talks

Books (translation):

1. S. A. Jafari, Persian translation of *Quantum Theory of Solids*, by E. P. O'Reilly, Isfahan Univ. of Tech. Press, Iran (2005).
2. S. A. Jafari, Persian translation of *Superconductivity, Superfluidity and Condensates*, by J. F. Annett, Isfahan Univ. of Tech. Press, Iran (2014).

Lecture notes:

1. S. A. Jafari, *Solid State Physics*, (in Persian), Based on the textbook of Ibach and Luth, Incomplete translation.
2. S. A. Jafari, *Computational Physics* (in Persian), Evolving manuscript.
3. S. A. Jafari, *Many-body quantum theory* (in Persian), Evolving manuscript.

Services:

1. Elected to board of directors, Physical Society of Iran (2020-2023)
2. Elected member of the steering committee of Condensed Matter Physics, Physical Society of Iran (2016-2019 and 2019-2022)
3. Organizer of 3 international workshops and schools, and 3 national schools
4. Member and award winner of the international affairs of Sharif Univ. of Tech.
5. Constant service in graduate, research and international relations committees of the physics department

References:

1. Professor Ganapathy Baskaran, Distinguished Visiting Research chair, Perimeter Institute, Canada. Email: baskaran@imsc.res.in
2. Professor Sadamichi Maekawa, RIKEN, Japan. Email: sadamichi.maekawa@riken.jp
3. Professor Takami Tohyama, Tokyo University of Science, Tokyo, Japan. Email: tohyama@rs.tus.ac.jp
4. Professor Juergen Koenig, University of Duisburg-Essen, Duisburg, Germany, Email: koenig@thp.uni-due.de
5. Professor Shahin Rouhani, Sharif University of Technology, Tehran, Iran, Email: rouhani@ipm.ir

Publications:

Books: (Translations from English to Persian)

1. S. A. Jafari, Persian translation of *Quantum Theory of Solids*, by E. P. O'Reilly, Isfahan Univ. of Tech. Press, Iran (2005).
2. S. A. Jafari, Persian translation of *Superconductivity, Superfluidity and Condensates*, by J. F. Annett, Isfahan Univ. of Tech. Press, Iran (2014).

Refereed Papers:

1. Z. Jalalimola, S. A. Jafari, arxiv:2002.00561 (2020) (accepted in Phys. Rev. B)
2. T. Farajollahpour, S. A. Jafari, *Phys. Rev. Research* **2** (2020) 023410
3. Z. Faraei, S. A. Jafari, *Phys. Rev. B* **101** (2020) 214508
4. Abolfath Hosseinzade, S. A. Jafari, *Ann. Phys. (NY)* **414** (2020) 168075
5. Abolfath Hosseinzade, S. A. Jafari, *Ann. der Phys.* **2020** (2020) 1900601.
6. Z. Faraei, S. A. Jafari, *Phys. Rev. B* **100** (2019) 245436.
7. Z. Jalalimola, S. A. Jafari, *Phys. Rev. B.* **100** (2019) 205413.
8. F. Adinehvand, Z. Faraei, T. Farajollahpour, S. A. Jafari, *Phys. Rev. B* **100** (2019) 195408.
9. A. Habibi, R. Ghadimi, S. A. Jafari, *J. Phys. Cond. Mat.* **32** (2019) 015604.
10. Z. Jalalimola, S. A. Jafari, *Phys. Rev. B* **100** (2019) 075113.
11. Z. Faraei, S. A. Jafari, *Phys. Rev. B* **100** (2019) 035447.
12. S. A. Jafari, *Phys. Rev. B* **100** (2019) 045144.
13. R. Ghadimi, M. Kargarian, S. A. Jafari, *Phys. Rev. B* **100** (2019) 024502.
14. T. Farajollahpour, Z. Faraei, S. A. Jafari, *Phys. Rev. B* **99** (2019) 235150.
15. R. Ghadimi, M. Kargarian, S. A. Jafari, *Phys. Rev. B* **99** (2019) 115122.
16. E. Adibi, A. Habibi, S. A. Jafari, *Phys. Rev. B* **99** (2019) 014204.
17. Z. Jalalimola, S. A. Jafari, *J. Magn. Magn. Mat.* **471** (2019) 220.
18. Z. Jalalimola, S. A. Jafari, *Phys. Rev. B* **98** (2018) 235430.
19. A. Habibi, E. Adibi, S. A. Jafari, *Phys. Rev. B* **98** (2018) 245105.
20. A. Mohajerani, Z. Faraei, S. A. Jafari, *J. Phys. Cond. Mat.* **30** (2018) 50LT01.
21. Z. Faraei, T. Farajollahpour, S. A. Jafari, *Phys. Rev. B* **98** (2018) 195402.
22. Z. Jalalimola, S. A. Jafari, *Phys. Rev. B* **98** (2018) 195415.
23. A. Habibi, S. A. Jafari, S. Rouhani, *Phys. Rev. B* **98** (2018) 035142.
24. T. Farajollahpour, S. A. Jafari, *Phys. Rev. B* **98** (2018) 085136.
25. T. Farajollahpour, S. A. Jafari, *J. Phys. Cond. Mat.* **30** (2017) 015602.
26. Z. Faraei, S. A. Jafari, *Phys. Rev. B* **96** (2017) 134516.
27. M. Salehi, S. A. Jafari, *Sci. Rep.* **7** (2017) 8221.
28. S. A. Jafari, *Phys. Rev. E* **96** (2017) 012159.
29. S. A. Jafari, F. Shahbazi, *Sci. Rep.* **6** (2016) 32720.
30. E. Adibi, S. A. Jafari, *Phys. Rev. B* **93** (2016) 075122.
31. M. Mashkooori, I. Mahyaeh, S. A. Jafari, *J. Phys. Soc. Jan.*, **85** (2016) 014707.
32. Hanif Hadipuor, S. A. Jafari, *Eur. Phys. Jour. B* **88** (2015) 270.

33. Z. Jalali, S. A. Jafari, *J. Phys. Conference Series*, **603** (2015) 012005.
34. M. Mashkoori, I. Mahyaeh, S. A. Jafari, *J. Phys. Conference Series*, **603** (2015) 012015.
35. E. Ahmadi, S. A. Jafari, *J. Phys. Conference Series*, **603** (2015) 012016.
36. M. Salehi, S. A. Jafari, *Ann. Phys.* **359** (2015) 64.
37. M. Mashkoori, S. A. Jafari, *J. Phys. Cond. Mat.* **27** (2015) 156001.
38. M. H. Zare, H. Mosadeq, F. Shahbazi, S. A. Jafari, *J. Phys. Cond. Ma.* **26** (2014) 456004.
39. S. A. Jafari, T. Tohyama, *J. Phys. Cond. Mat.* **26** (2014) 415601.
40. S. A. Jafari, *Eur. Phys. Lett.* **107** (2014) 20005
41. A. Habibi, S. A. Jafari, *J. Phys. Cond. Mat.* **25** (2013) 375501
42. J. Sarabadani, M. Soltani, P. Zakeri, and S. A. Jafari, *Phys. Rev. A* **86** (2012) 022507
43. S. A. Jafari, *J. Phys. Cond. Mat.* **24** (2012) 305601
44. S. A. Jafari, *J. Phys. Cond. Mat.* **24** (2012) 205802.
45. M. Ebrahimkhas, S. A. Jafari, *Eur. Phys. Lett.* **98** (2012) 27009.
46. S. A. Jafari, G. Baskaran, *J. Phys.: Cond. Mat.* **24** (2012) 09560.
47. M. Ebrahimkhas, S. A. Jafari, G. Baskaran, *Int. J. Mod. Phys. B* **26** (2012) 1242006.
48. E. Sarvestani, S. A. Jafari, *Phys. Rev. B* **85** (2012) 024513.
49. D. Haberer, et al, *Phys. Status Solidi B*, **248** (2011) 2639.
50. Z. Faraei, S. A. Jafari, V. Daadmehr, *Physica C* **471** (2011) 458.
51. D. Haberer, et al, *Advanced Materials* **23** (2011) 4487.
52. H. Mosadeq, F. Shahbazi, S. A. Jafari, *JPCM*, **23** (2011) 226006.
53. D. Haberer, et al, *Phys. Rev. B* **83** (2011) 165433.
54. M. Hafez, S. A. Jafari, *Eur. Phys. Jour. B* **78** (2010) 323.
55. H. H. Arefi, S. A. Jafari, M. R. Abolhassani, *Eur. Phys. J. B* **77** (2010) 331.
56. M. Alaei, S. A. Jafari, *Phys. Lett. A*, **374** (2010) 3793.
57. M. Hafez, S. A. Jafari, Sh. Adibi, F. Shahbazi, *Phys. Rev. B*, **81** (2010) 245131.
58. M. H. Zare, M. Amini, F. Shahbazi, S. A. Jafari, *J. Phys. Cond. Mat.* **22** (2010) 255503.
59. M. Amini, S. A. Jafari, F. Shahbazi, *Eur. Phys. Lett.* **90** (2010) 17003.
60. M. B. Fathi, S. A. Jafari, *Physica B* **405** (2010) 1658.
61. M. Hafez, S. A. Jafari, M. R. Abolhassani, *Phys. Lett. A* **373** (2009) 4479.
62. M. Amini, S. A. Jafari, F. Shahbazi, *Eur. Phys. Lett.* **87** (2009) 37002 .
63. M. Ebrahimkhas, S. A. Jafari, *Phys. Rev. B* **79** (2009) 205425.
64. S. A. Jafari, *Eur. Phys. J. B* **68** (2009) 537.
65. Z. Noorbakhsh, F. Shahbazi, S. A. Jafari, G. Baskaran, *JPSJ* **78** (2009) 054701.
66. S. A. Jafari, *Int. J. Mod. Phys. B* **23** (2009) 395.
67. S. A. Jafari, *Opt. Commun.* **282** (2009) 317.
68. M. Alaei, S. A. Jafari, H. Akbarzadeh, *J. Phys. Chem. Sol.* **69** (2008) 3283.
69. S. A. Jafari, *Iranian J. Phys. Res.* **8** No. 2 (2008) 113.
70. S. A. Jafari, T. Tohyama, S. Maekawa, *J. Phys. Soc. Jon.* **76** (2007) 044706.

71. S. A. Jafari, T. Tohyama, S. Maekawa, *J. Mag. Mag. Mat.* **310** (2007) 960.
72. S. A. Jafari, T. Tohyama, S. Maekawa, *JPSJ (Letter)* **75** (2006) 083706.
73. S. A. Jafari, T. Tohyama, S. Maekawa, *J. Phys. Soc. Jpn.* **75** (2006) 054703.
74. S. A. Jafari, G. Baskaran, *Eur. Phys. Jour. B* **43** (2005) 175.
75. G. Baskaran, S.A. Jafari, *Phys. Rev. Lett.* **92** (2004) 199702.
76. G. Baskaran, S. A. Jafari, *Phys. Rev. Lett.* **89** (2002) 016402.

Preprints:

1. K. Haghighi Mood, S. A. Jafari, E. Adibi, G. Baskaran, M. R. Abolhassani, arXiv: 1107.4208
2. A. Youssefi, M. Ansari-Fard, S. A. Jafari, arXiv: 1608.03948 (2016)
3. A. Habibi, T. Farajollahpour, S. A. Jafari, arXiv:1904.10758 (2019) (under review in JPCM)
4. A. Mohajerani, Z. Faraei, S. A. Jafari, arxiv:2004.14112 (2020) (under review, PRB)

In preparation:

1. S. A. Jafari, *The SYK proximity effect*
2. S. A. Jafari, J. Koenig, *Inter-valley paramagnons in two dimensional Dirac materials*
3. A. Moradpouri, M. Torabian, S. A. Jafari, *Electron current from temporal gradients in tilted Dirac cone materials*

Conference Contributions:

1. Conference on Signatures of Topology in Condensed Matter, 21-25 Oct. 2019, ICTP, Italy (**Contributed speaker**)
2. 6th National Conference on Progress in Superconductivity, Univ. of Tehran, 1-2 May 2019, Tehran, Iran (**Invited speaker**)
3. 14th Condensed matter physics conference, Physical Society of Iran, 6-7 Feb. 2019, Ahwaz, Iran (**Keynote speaker**)
4. Asia Pacific Workshop (APW) and workshop on Diluted Magnetic Semiconductors, 1-5 Nov. 2018, Beijing (**Invited Talk**)
5. Conference on quantum dynamics of disordered interacting systems, ICTP, Trieste, Italy, 11-15 July 2018 (**Contributed Talk**)
6. Asia Pacific Workshop, Feb. 2017, Korea (**Invited Talk**)
7. Conference on Interactions and Topology in Dirac systems, ICTP, Trieste, Italy, Aug. 2016 (**Contributed Talk**)
8. Asia Pacific Workshop, Zhejiang University, April 2015, (**Invited Talk**)
9. International workshop on Dirac Electrons in Solids, Univ. of Tokyo, Jan. 2015 (**Contributed Talk**)
10. Advanced mini-workshop on recent progress in graphene, March 2014, Kish, Iran (**Invited Talk**)

11. Fifth International conference in Nanostructures (ICNS5), March 2014, Kish, Iran **(Invited Talk)**
12. National Conference on Advances in Superconductivity, June. 2012, Kashan, Iran **(Invited Talk)**
13. 1st NAREGI international Nanoscience Conference, June 2005, Nara, Japan.
14. National Conference on Condensed Matter and Materials Physics, Jan. 2006 Baroda, India.
15. International Conference on Magnetism, Aug. 2006, Kyoto, Japan.
16. Spectroscopies in Novel Superconductors, Aug. 2006, Sendai, Japan.
17. Novel Quantum Phenomena in Graphene, Dec. 2006, Chennai, India **(Invited Talk)**.
18. The international symposium on Anomalous Quantum Materials 2006 and the 5th Asia-Pacific Workshop, Okinawa, Japan.
19. International Symposium on Anomalous Quantum Materials 2008 and the 7th Asia-Pacific Workshop, Tokyo, Japan **(Contributed Talk)**
20. Conference on Magnetism, Superconductivity and phase transitions in novel and complex Materials (MSM09), Nov. 2009, Kolkata, India **(Invited Talk)**.
21. 3rd Materials Science School for Young Scientists, Aug. 2006, Akiu, Sendai, Japan.
22. 12th Condensed Matter meeting, Institute for Advanced Studies in Basic Sciences (IASBS), Zanjan, Iran, Spring 2006 **(Invited Talk)**

Lecture notes:

1. S. A. Jafari, *Solid State Physics*, (in Persian), Evolving translation of the textbook of Ibach and Luth. Substance for bilingual Deutsch-Persian book.
2. S. A. Jafari, *Computational Physics* (in Persian), Evolving manuscript.
3. S. A. Jafari, *Many-body quantum theory* (in Persian), Evolving manuscript.