

Curriculum Vita of Vahid Karimipour

1 Biodata

- First Name: Vahid
- Surname: Karimipour
- Date of Birth: 1961
- Nationality: Iranian
- Place of Birth: Khorramabad-Iran
- Marital Status: Married, two children
- Permanent Address: Department of Physics, Sharif University of Technology, P.O. Box 11155-9161, Tehran, Iran.
- Electronic Address: Vahid@sharif.edu
- webpage: <http://sharif.ir/~vahid/>

2 Formal Education

- B.S. Electrical Engineering (1987); Shiraz University; Shiraz, Iran
- M.S. Physics (1989); Sharif University of Thechnology; Tehran, Iran
- Phd. Physics (1993); Sharif University of Thechnology; Tehran, Iran
Title of Phd dissertation : (Nonstandard Deformation of the Lie groups)

3 Present Position

- Professor of Physics (2001-); Sharif University of Thechnology, chairman of the department(2009-)

4 Teaching Experience at the graduate level (1994-)

- Courses: Advanced Quantum Mechanics, Advanced Statistical Mechanics, Modern Mathematical Physics, Quantum Field Theory, Statistical field theory, Group Theory and Lie algebra, Quantum computation, Quantum information, Critical Phenomena.

5 Research Fields of Interests

- Quantum Information and Quantum Computation (Topological quantum computation, Quantum State Transfer, Quantum Networks, Entanglement properties of many-body systems)

6 Editorial Activities

Member of the Editorial Board, European Physical Journal D (EPJD), Atomic, Molecular, Optical and Plasma Physics.

Referee for: Science, Physical Review Letters, Physical Review (A,B), European Physical Journal(B), Journal of Physics A, International Journal of Theoretical Physics.

7 Organizational Activities

Organizer and general chair of the series of Iran International Conference in Quantum Information (IICQI) and Iran International Summer School in Quantum Information (IISQI)

- Co-Director, Advanced School and Workshop on Quantum Science and Quantum Technologies. ICTP, Trieste, Italy, 2017.
- Advisor for " School on New Trends in Quantum Dynamics and Quantum Entanglement (smr2224), 14-25 Feb. 2011, ICTP, Italy".
- IICQI-07 7-10 Sept. 2007, Kish Island, Iran. <http://iicqi-10.sharif.ir/iicqi-07/iicqi07.htm>
- IISQI-08 13-27 Sept. 2008, Kish Island, Iran, <http://iissqi-08.sharif.ir/>
- IICQI-10 11-14 Sept. 2010, Kish Island, Iran, <http://iicqi-10.sharif.ir/>
- IICQI-12 planned for Sept. 2012, <http://iicqi-12.sharif.ir/>

8 Awards

- Distinguished award of the Iranian Physical Society (1993) for the Phd dissertation.
- Regular Associate (1998-2003) and (2006-2012): Abdus Salam International Center for Theoretical Physics (ICTP) Italy.
- Simons Associate (2015-) Abdus Salam International Center for Theoretical Physics (ICTP) Italy.
- Outstanding referee of the American Physical Society, selected in 2013. (This is a long-life designation)

9 Invited Plenary Lectures in national conferences

- Iranian Annual Physics Conference (1994); Kermanshah. (Title: Quantum Groups and Physics)
- Iranian Annual Mathematics Conference (1996); Kerman. (Title: Differential Geometry on Quantum Groups)
- Iranian Annual Physics Conference (1997); Rasht. (Title: Recent developments in Mathematical Physics: Topological field theory and Knot theory)
- Iranian Annual Physics Conference (2005); Shahrood. (Title: Quantum Computation and Quantum Information)
- Annual Conference in condensed matter physics (2011), Institute of Advanced Studies in Basic Sciences, Gava Zang, Zanjan, title: Linking classical and quantum stochastic processes.
- IPM Spring Conference (2012), Institute of Research in Fundamental Sciences (IPM), , title: Topological Quantum Computation.
- Workshop in the future of computer sciences (2012), Iran Academy of Sciences, Tehran, Iran, title: Perspective on quantum computation and quantum information.
- 23rd Iranian Conference in Optics and Photonics (ICOP)2017, title: Quantum Mechanics in the New Century

10 Invited Lectures in International Conferences and Schools

- Four lectures on Matrix Product States in " Summer School on Decoherence, Entanglement and Entropy, August 2009, Oxford Kobe Institute (**Kobe, Japan**)".
- Invited lecture: 25th Regional Conference in Mathematical Physics, **Antalia, Turkey**, October 2010."

- Lecture in the inauguration conference of ICTP-ECAR, **Izmir, Turkey** <http://ictp-ecar.org>, 5-7 May, 2014.
- Two lectures in Lahore University on Topological Quantum Computation, **Pakistan**, October, 2019.
- Lecture on Static Quantum Circuit for Quantum Computation, 25th International Annual Laser Physics Workshop, **Yerevan, Armenia**, 2016.
- Quantifying the coherence power of quantum operations, Invited lecture in Asia-Pacific Conference and Workshop in Quantum Information Science, 2016, **Baku, Azerbaijan**.
- Time independent Quantum Circuits
Quantum 2017: From Foundations of Quantum Mechanics to Quantum Information and Quantum Metrology and Sensing, **Turin, Italy**, 7-13 May, 2017,
- Using entanglement to for secure alignment of coordinate systems
26th ANNUAL INTERNATIONAL LASER PHYSICS WORKSHOP (Kazan, July 17-21, 2017,)
- Topological order and topological quantum computation
New Advances in Condensed Matter Physics: Quantum transport, topological effects and energy conversion in low-dimensional systems, 20-28 September 2017, **Khiva, Uzbekistan**,
- Secure alignment of directions
Asia-Pacific Conference and Workshop on Quantum Information Science, 26-29 September 2017, **Uzbekistan**,
- A short review of classical and quantum cryptography
TUD-CIIT International mini school on quantum and ultrafast optics, theory and experiment
COMSATS Institute of Information Technology (CIIT), 4-6 October 2017, **Islamabad, Pakistan**.
- Sequential quantum secret sharing
TUD-CIIT International mini school on quantum and ultrafast optics, theory and experiment
COMSATS Institute of Information Technology (CIIT), 4-6 October 2017, **Islamabad, Pakistan**.
- Two invited talks (Entanglement distribution with separable states) and (Time independent quantum circuits with local interactions), KIAS 2017 Workshop on Quantum Information Science, Nov 27 - Dec 8, 2017, KIAS, **Seoul, Korea**

11 Notable PhD graduates supervised and their current positions

- A. Langari Professor of Physics, Sharif University of Technology, Tehran, Iran.

- A. Bayat Professor, University of Electronic Science and Technology of China (UESTC), Chengdu, China.
- F. Jafarpour Professor of Physics, Bu Ali University, Hamedan, Iran.
- M. Asoudeh Assistant professor of Physics, Azad University, Tehran, Iran.
- E. Fouladvand Associate professor of Physics, Zanzan University, Zanzan, Iran.
- L. Memarzadeh Assistant professor of Physics, Sharif University of Technology, Tehran, Iran.
- A. Rezakhani Assistant professor of Physics, Sharif University of Technology, Tehran, Iran.
- M. H. Zarei Assistant professor of Physics, Shiraz University, Shiraz, Iran.
- A. Ramezanzpour Assistant professor of Physics, Shahroud University, Shahroud, Iran.
- A. Mani Assistant professor of Physics, Tehran University, Tehran, Iran.

12 List of Journal Publications

1. Mina Doosti, Farzad Kianvash, Vahid Karimipour
Universal superposition of arbitrary orthogonal state
Accepted for publication in Physical Review A
2. Tahereh Abad, Klaus Mlmer, and Vahid Karimipour
Sequentially generated entanglement, macroscopicity and squeezing in a spin chain
Phys. Rev. A 96, 042337 (2017)
3. F. Rezazadeh, A. Mani, and V. Karimipour
Secure alignment of coordinate systems by using quantum correlation
Phys. Rev. A 96, 022310 (2017)
4. Zahra Raissi, and Vahid Karimipour
Creating Maximally Entangled States by Gluing
Quant. Inf. Process. 16, 81 (2017).
5. Sahand Seifnashri, Farzad Keyanvash, Jahangir Nobakht, and Vahid Karimipour
Time independent quantum circuits with local interactions
Phys. Rev. A 93, 062342 (2016)
6. M Soleimanifar, V Karimipour
No-go theorem for iterations of unknown quantum gates
Physical Review A 93 (1), 012344

7. R Mohseninia, V Karimipour
Quantum non-Abelian Potts model and its exact solution
Physical Review B **93** (3), 035127.
8. T Abad, V Karimipour
Scaling of macroscopicity close to a quantum phase transition
Physical Review B, **93**, 195127 (2016).
9. A Mani, V Karimipour
Cohering and decohering power of quantum channels
Physical Review A **92** (3), 032331 .
10. V Karimipour, L Memarzadeh, NT Bordbar
Systematics of entanglement distribution by separable states
Physical Review A **92** (3), 032325 .
11. V Karimipour, M Asoudeh
Quantum secret sharing and random hopping: Using single states instead of entanglement
Physical Review A **92** (3), 030301.
12. R Mohseninia, SS Jahromi, L Memarzadeh, V Karimipour
Quantum phase transition in the Z 3 Kitaev-Potts model
Physical Review B **91** (24), 245110 .
13. Azam Mani, V. Karimpour, L. Memarzadeh
A comparison of parallel and anti-parallel two qubit mixed states
Phys. Rev. A **91**, 012304 (2015)
14. M. Asoudeh, V. Karimipour
Perfect State Transfer on Spin-1 Chains
Quantum Inf Process, DOI 10.1007/s11128-013-0676-8
15. V. Karimpour, L. Memarzadeh, P. Zarkeshian
The Kitaev-Ising model, Transition between topological and ferromagnetic order
Phys. Rev. A **87**, 032322 (2013).
16. T. Abad, V. Karimipour, L. Memarzadeh,
Power of quantum channels for creating quantum correlations,
Phys. Rev. A **86**, 062316 (2012).
17. Fabio Benatti. Roberto Floreanini, V. Karimipour,
Noise effects in perfect transmission of quantum states,
Phys. Rev. A **86**, 062335 (2012).

18. V. Karimipour, M. H. Zarei,
An algorithmic proof for the completeness of two-dimensional Ising model,
Phys. Rev. A **86**, 052303 (2012).
19. V. Karimipour, M. H. Zarei,
Completeness of classical ⁴ theory on 2D lattices,
Phys. Rev. A **85**, 032316 (2012).
20. V. Karimipour, M. Sarmadi Rad, and M. Asoudeh,
Perfect State Transfer in Two and Three Dimensional Structures,
Phys. Rev. A, **85**, 010302(Rapid Communications) (2012).
21. V. Karimipour, M. Marvian,
Secure quantum carriers for quantum state sharing,
International Journal of Quantum Information (IJQI), Vol. 10, No. 2 (2012) 1250018.
22. V. Karimipour, L. Memarzadeh and A. Mani,
Characterization of qutrit channels in terms of their covariance
and symmetry properties, **Phys. Rev. A** **84**, 012321 (2011).
23. V. Karimipour
A complete characterization of the spectrum of the Kitaev
model on spin ladders, **Phys. Rev. B** **79**, 214435 (2009).
24. Vahid Karimipour, Zohreh Meghdadi, Laleh Memarzadeh
New Phase Transitions in Optimal States for Memory Channels,
Physical Review A, **79**, 032321 (2009).
25. S. Alipour, S. Baghbanzadeh, V. Karimipour
Exact symmetry breaking ground states for quantum spin chains,
Europhysics Letters (EPL), **84** (2008) 67006.
26. Karimipour V, Memarzadeh L
Matrix product representations for all valence bond states
Physical Review B **77**, 094416 (2008).
27. Alipour S, Karimipour V, Memarzadeh M
Exact ground states for two new spin-1 quantum chains,
European Physics Journal B, vol 62, no. 2, pp. 159-169, 2008 2008.
28. Karimipour V, Memarzadeh L
Matrix product representations for all valence bond states
Physical Review B **77**, 094416 (2008).

29. Alipour S, Karimipour V, Memarzadeh M
Exact ground states for two new spin-1 quantum chains,
new features of matrix product states
European Physics Journal B, vol. **62**, no. **2**, pp. **159-169**, **2008**.
30. Asoudeh M, Karimipour V, Sadrolashrafi A
Exact dimer ground states for a continuous family of quantum spin chains and zigzag ladders
Physical Review B 76 (6): Art. No. 064433 AUG 2007.
31. Asoudeh M, Karimipour V, Sadrolashrafi A
Entangled rings, matrix product states, and exact solutions of XYZ spin chains,
Physical Review A 76 (1): Art. No. 012320 JUL 2007.
32. Asoudeh M, Karimipour V, Sadrolashrafi A
A Quantum phase transitions and matrix product states in spin ladders,
Physical Review B 75 (22): Art. No. 224427 JUN 2007.
33. Alipour S, Karimipour V, Memarzadeh L
Entanglement and quantum phase transitions in matrix-product spin-1 chains,
Physical Review A 75 (5): Art. No. 052322 MAY 2007.
34. Ghahari F, Karimipour V, Shahrokhshahi R
Dynamics of entanglement of bosonic modes on symmetric graphs,
Physics Letters A 363 (4): 271-276 APR 2 2007.
35. Bayat A, Karimipour V
Transfer of d-level quantum states through spin chains by random swapping,
Physical Review A 75 (2): Art. No. 022321 FEB 2007.
36. Karimipour V, Memarzadeh L
Entanglement and optimal strings of qubits for memory channels,
Physical Review A 74 (6): Art. No. 062311 DEC 2006.
37. Karimipour V, Memarzadeh L
Transition behavior in the capacity of correlated noisy channels in arbitrary dimensions,
Physical Review A 74 (3): Art. No. 032332 SEP 2006.
38. Karimipour V
Reply to "Comment II on 'Quantum secret sharing based on reusable Greenberger-Horne-Zeilinger states as secure carriers' "
Physical Review A 74 (1): Art. No. 016302 JUL 2006.

39. Asoudeh M, Karimipour V
Thermal entanglement of spins in mean-field clusters,
Physical Review A 73 (6): Art. No. 062109 JUN 2006.
40. Bayat A, Karimipour V, Marvian I
Threshold distances for transmission of EPR pairs through Pauli channels,
Physics Letters A 355 (2): 81-86 JUN 26 2006.
41. Karimipour V, Memarzadeh L
Equi-entangled bases in arbitrary dimensions,
Physical Review A 73 (1): Art. No. 012329 JAN 2006.
42. Karimipour V
Reply to "Comment on 'quantum key distribution for d-level systems with generalized Bell states' " ,
Physical Review A 72 (6): Art. No. 066302 DEC 2005.
43. Karimipour V, Majd N
Exact solutions for a universal set of quantum gates on a family of isospectral spin chains,
Physical Review A 72 (5): Art. No. 052305 NOV 2005.
44. Karimipour V
Reply to "Comment on 'Quantum secret sharing based on reusable Greenberger-Horne-Zeilinger states as secure carriers' " ,
Physical Review A 72 (5): Art. No. 056301 NOV 2005.
45. Asoudeh M, Karimipour V
Entanglement of bosonic modes in symmetric graphs,
Physical Review A 72 (3): Art. No. 032339 SEP 2005.
46. Bayat A, Karimipour V
Thermal effects on quantum communication through spin chains,
Physical Review A 71 (4): Art. No. 042330 APR 2005.
47. Asoudeh M, Karimipour V
Thermal entanglement of spins in an inhomogeneous magnetic field,
Physical Review A 71 (2): Art. No. 022308 FEB 2005.
48. Asoudeh M, Karimipour V
Thermal entanglement of spins in the Heisenberg model at low temperatures,
Physical Review A 70 (5): Art. No. 052307 NOV 2004.

49. Mashaghi AR, Ramezanpour A, Karimipour V
Investigation of a protein complex network,
European Physics Journal B 41 (1): 113-121 SEP 2004.
50. Karimipour V, Majd N
Exact solutions for universal holonomic quantum gates,
Physical Review A 70 (1): Art. No. 012320 JUL 2004.
51. Asoudeh M, Karimipour V, Memarzadeh L, Rezakhani AT
On a suggestion relating topological and quantum mechanical entanglements,
Physics Letters A 327 (5-6): 380-390 JUL 12 2004.
52. Mashaghi A, Ramezanpour A, Karimipour V
Structural properties of *Saccharomyces cerevisiae* protein complex network,
Biophysics Journal 86 (1): 605A-605A Part 2 Suppl. S JAN 2004.
53. Asoudeh M, Karimipour V, Memarzadeh L, Rezakhanni AT
Symmetrization and entanglement of arbitrary states of qubits,
Physics Letters A 313 (5-6): 330-337 JUL 14 2003.
54. Ramezanpour A, Karimipour V, Mashaghi A
Generating correlated networks from uncorrelated ones,
Physical Review E 67 (4): Art. No. 046107 Part 2 APR 2003.
55. Bagherinezhad S, Karimipour V
Quantum secret sharing based on reusable Greenberger-Horne-Zeilinger states as secure carriers,
Physical Review A 67 (4): Art. No. 044302 APR 2003.
56. Karimipour V, Rezakhani AT
Generation of phase-covariant. 052111 NOV 2002.
57. Karimipour V
General reaction-diffusion processes with separable equations for correlation functions,
Physical
quantum cloning,
Physical Review A 66 (5): Art. No. 041114 Part 1 OCT 2002.
58. Ramezanpour A, Karimipour V
Simple models of small-world networks with directed links,
Physical Review E 66 (3): Art. No. 036128 Part 2A SEP 2002.

59. Karimipour V, Bahraminasab A, Bagherinezhad S
Quantum key distribution for d-level systems with generalized Bell states,
Physical Review A 65 (5): Art. No. 052331 Part A MAY 2002.
60. Karimipour V, Bahraminasab A, Bagherinezhad S
Entanglement swapping of generalized cat states and secret sharing,
Physical Review A 65 (4): Art. No. 042320 Part A APR 2002.
61. Karimipour V, Ramzanpour A
Correlation effects in a simple model of a small-world network,
Physical Review E 65 (3): Art. No. 036122 Part 2A MAR 2002.
62. Karimipour V, Seradjeh SBH
A new class of models for surface relaxation with exact stationary measures,
Europhysics Letters 57 (5): 658-664 MAR 2002.
63. Khorrami M, Karimipour V
Exact determination of the phase structure of a multi-species asymmetric exclusion process,
Journal of Statistical Physics 100 (5-6): 999-1030 SEP 2000.
64. Karimipour V
Some general features of matrix product states in stochastic systems,
Journal of Physics A-Mathematical and General 33 (4): 709-719 FEB 4 2000.
65. Alimohammadi M, Karimipour V, Khorrami M
A two-parametric family of asymmetric exclusion processes and its exact solution,
Journal of Statistical Physics 97 (1-2): 373-394 OCT 1999.
66. Karimipour V
A remark on integrability of stochastic systems solvable by matrix product ansatz,
Europhysics Letters 47 (4): 501-507 AUG 1999.
67. Karimipour V
A multi-species asymmetric exclusion process, steady state and correlation functions on a periodic lattice,
Europhysics Letters 47 (3): 304-310 AUG 1 1999.
68. Karimipour V, Khorrami M
Anisotropic Heisenberg magnet with long-range interactions. Integrability and phase structure,
International Journal of Theoretical Physics 38 (3): 971-984 MAR 1999.

69. Karimipour V
Multispecies asymmetric simple exclusion process and its relation to traffic flow,
Physical Review E 59 (1): 205-212 Part A JAN 1999.
70. Langari A, Karimipour V
A modified quantum renormalization group for XXZ spin chain,
International Journal of Modern Physics B 12 (23): 2359-2370 SEP 20 1998.
71. Alimohammadi M, Karimipour V, Khorrami M
Exact solution of a one-parameter family of asymmetric exclusion processes,
Physical Review E 57 (6): 6370-6376 JUN 1998.
72. Karimipour V
Integrable structure of the new Calogero models,
Journal of Mathematical Physics 39 (2): 913-920 FEB 1998.
73. Langari A, Karimipour V
Quantum renormalization group for one-dimensional fermion systems: a modified scheme,
Physics Letters A 236 (1-2): 106-112 DEC 1 1997.
74. Ghezelbash AM, Karimipour V
Global conformal invariance in D dimensions and logarithmic correlation functions,
Physics Letters B 402 (3-4): 282-289 JUN 12 1997.
75. Karimipour V
A solvable Hamiltonian system: Integrability and action-angle variables,
Journal of Mathematical Physics 38 (3): 1577-1582 MAR 1997.
76. Karimipour V, Mostafazadeh
A Lattice topological field theory on nonorientable surfaces,
Journal of Mathematical Physics 38 (1): 49-66 JAN 1997.
77. Karimipour V
Bicovariant differential geometry of quantum group $SL(H)$,
Letters in Mathematical Physics 35 (4): 303-311 DEC 1995.
78. Karimipour V
A study of representations of the algebra of functions on the quantum group $GL(Q)(N)$,
Journal of Physics A-Mathematical and General 27 (24): 8105-8122 DEC 21 1994.
79. Aghamohammadi A, Karimipour V, Nezami AR
Non-standard deformation of $B(n)$ series,
Journal of Physics A-Mathematical and General 27 (5): 1609-1616 MAR 7 1994.

80. Karimipour V
The Quantum De-Rham Complexes associated with $SLH(2)$,
Letters in Mathematical Physics 30 (2): 87-98 FEB 1994.
81. Karimipour V
Representations of the quantum matrix algebra $M(q,p)(2)$,
Journal of Physics A-Mathematical and General 26 (22): 6277-6284 NOV 21 1993.
82. Karimipour V
Q-boson representation of the quantum matrix algebra $M_q(3)$,
Journal of Physics A-Mathematical and General 26 (18): L957-L962 SEP 21 1993.
83. Karimipour V
Representations of the coordinate ring of $GL_q(3)$,
Letters in Mathematical Physics 28 (3): 207-217 JUL 1993.
84. Karimipour V, Aghamohammadi A
Multiparametric quantization of the special linear super algebra,
Journal of Mathematical Physics 34 (6): 2561-2571 JUN 1993.
85. Karimipour V
The quantum double and the universal R-matrix for non-standard deformation of $A(n-1)$,
Journal of Physics A-Mathematical and General 26 (5): L239-L244 MAR 7 1993.
86. Aghamohammadi A, Karimipour V, Rouhani S
The multiparametric non-standard deformation of $A(n-1)$,
Journal of Physics A-Mathematical and General 26 (3): L75-L82 FEB 7 1993.