

# 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 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)

## 7 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 <sup>4</sup> 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,  
**Euromphysics 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, Rezakhani 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. Ramezani 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  $Mq(3)$ ,  
**Journal of Physics A-Mathematical and General** 26 (18): L957-L962 SEP 21 1993.
83. Karimipour V  
 Representations of the coordinate ring of  $GLq(3)$ ,  
**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.

## 8 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

## 9 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, <http://ictp-ecar.org>, 5-7 May, 2014.
- Two lectures in Lahore University on Topological Quantum Computation, 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-Pasific Conference and Workshop in Quantum Information Science, 2016, Baku, Azerbayejan.
- 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.

## 10 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.

## 11 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 (IISSQI)

- IICQI-07 7-10 Sept. 2007, Kish Island, Iran. <http://iicqi-10.sharif.ir/iicqi-07/iicqi07.htm>
- IISSQI-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/>
- Advisor for " School on New Trends in Quantum Dynamics and Quantum Entanglement (smr2224), 14-25 Feb. 2011, ICTP, Italy".

## 12 Notable PhD graduates supervised and their current positions

- A. Langari Professor of Physics, Sharif University of Technology, Tehran, Iran.
- M. Asoudeh Assistant professor of Physics, Azad University, Tehran, 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.
- A. Bayat Post-doctoral fellow, University college, London.
- A. Ramezani Post-doctoral fellow, Polytechnico Torino, Italy.