

Dr. Jun Jing

Email : jingjun79@gmail.com or jingjun@zju.edu.cn

Mobile : +86-13585643140

Current Affiliation

Position: Full professor

Institute of Optics, Department of Physics

Zhejiang University, Hangzhou 310027, Zhejiang, China

Education

- Shanghai Jiao Tong University: September 2002 – June 2007
Doctor of Philosophy in Theoretical Physics, Supervisor: Prof. Hongru Ma
- Shanghai Jiao Tong University: March 2000 – June 2002
Second Bachelor degree in Applied Electronics
- Shanghai Jiao Tong University: September 1998 – June 2002
Bachelor degree in Applied Physics

Working Experience

- Full Professor
Institute of Atomic and Molecular Physics, Jilin University, China (May 2014 – February 2017).
- Research Fellow
Supervisor: Prof. Chi-Hang Lam, Applied Physics Department, The Hong Kong Polytechnic University, Hong Kong (March 2016 – September 2016).
- Research Scientist
Supervisor: Prof. Xuedong Hu, Physics Department, University at Buffalo, The State University of New York, USA (July 2013 – January 2014), on “Quantum state manipulation and decoherence in multiple-electron-spin systems in semiconductor quantum dots”.
- Visiting Scholar
Supervisor: Prof. Lianao Wu, Theoretical Physics Department, Basque Country University, Bilbao, Spain (March – May, 2013; May – June, 2015; February – March, 2018), on “Quantum information and quantum nonperturbative control”.
- Postdoctoral Research Associate
Supervisor: Prof. Ting Yu, Stevens Institute of Technology, New Jersey, USA (March 2010 – May 2012), on “Non-Markovian dynamics of Quantum Open Systems”.

- Associate Professor
Department of Physics, Shanghai University, China (February 2009 – May 2014)
- Lecturer
Department of Physics, Shanghai University, China (July 2007 – February 2009)

Research Interests

- Nonperturbative quantum control over open-systems
- Non-Markovian quantum trajectory methods and quantum noise for open-systems
- Quantum decoherence, disentanglement and relaxation in atomic, molecular and optical systems
- Quantum adiabatic theorem and geometry quantum computing
- Numerical simulation in condensed matter physics and statistical physics

Publications

1. J. Jing and L.-A. Wu, “Decoherence and control of a qubit in spin baths: an exact master equation study”, to be appear at Scientific Reports (2018).
2. J. Jing, T. Yu, C.-H. Lam, J. Q. You, and L.-A. Wu, “Control relaxation via dephasing: A quantum state diffusion study”, Physical Review A, 97, 012104 (2018).
3. Y. Huangfu and J. Jing, “Steady bipartite coherence induced by non-equilibrium environment”, SCIENCE CHINA, Physics, Mechanics and Astronomy 61, 010311 (2018).
4. J. Jing, R. W. Chhajlany, and L.-A. Wu, “Fundamental Limitation on Cooling under Classical Noise”, Scientific Reports 7, 41598 (2017).
5. J. Jing, C.-H. Lam, and L.-A. Wu, “Non-Abelian holonomic transformation in the presence of classical noise”, Physical Review A 95, 012334 (2017).
6. H.-D. Zhang, J. Guo, Y. Shi, H. Du, H.-F. Liu, X.-R. Huang, X.-S. Liu, and J. Jing, “Exploration of High-Harmonic Generation from the CS₂ Molecule by the Lewenstein Method in Two-Color Circularly Polarized Laser Field”, Chinese Physics Letters 34, 013201 (2017).
7. X.-D. Zhai, L.-G. Qin, L.-J. Tian, J. Jing, “The Dynamical Evolution of Quantum Correlations in the Two Isolate Spin Particles Coupled to a Common Bath”, International Journal of Theoretical Physics 56, 302 (2017).
8. J. Jing, L.-A. Wu, and A. del Campo, “Fundamental speed limits to the generation of quantumness”, Scientific Reports 6, 38149 (2016).

9. P. V. Pyshkin, D.-W. Luo, J. Jing, J. Q. You, and L.-A. Wu, “Expedited Holonomic Quantum Computation via Net Zero-Energy-Cost Control in Decoherence-Free Subspace”, *Scientific Reports* 6, 37781 (2016).
10. J. Jing, M. S. Sarandy, D. A. Lidar, D.-W. Luo, and L.-A. Wu, “Eigenstate tracking in open quantum systems”, *Physical Review A* 94, 042131 (2016).
11. Z.-M. Wang, C. A. Bishop, J. Jing, Y.-J. Gu, C. Garcia, and L.-A. Wu, “Shortcut to nonadiabatic quantum state transmission”, *Physical Review A* 93, 062338 (2016).
12. T. Ma, J. Jing, Y. Guo, and T. Yu, “Quantum feedback control for qubit-qutrit entanglement”, *Quantum Information and Computation* 16, 0597 (2016).
13. S.-C. Wu, L.-G. Qin, J. Jing, G.-H. Yang, and Z.-Y. Wang, “Triple optomechanical induced transparency in a two-cavity system”, *Chinese Physics B* 25, 054203 (2016).
14. B. Corn, J. Jing, and T. Yu, “Non-Markovian quantum trajectory unravellings of entanglement”, *Quantum Information and Computation* 16, 0483-0497 (2016).
15. J. Jing and X. Hu, “Scaling of decoherence for a system of uncoupled spin qubits”, *Scientific Reports* 5, 17013 (2015).
16. J. Jing, D. Segal, B. Li, and L.-A. Wu, “Transient unidirectional energy flow and diode-like phenomenon induced by non-Markovian environments”, *Scientific Reports* 5, 15332 (2015).
17. W. Xiong, D.-Y. Jin, J. Jing, C.-H. Lam, and J. Q. You, “Controllable coupling between a nanomechanical resonator and a coplanar-waveguide resonator via a superconducting flux qubit”, *Physical Review A* 92, 032318 (2015).
18. L. L. Yan, J. Q. Zhang, J. Jing, and M. Feng, “Suppression of dissipation in a laser-driven qubit by white noise”, *Physics Letters A* 379, 2417 (2015).
19. J. Jing, L.-A. Wu, M. Byrd, J. Q. You, T. Yu, and Z.-M. Wang, “Nonperturbative Leakage Elimination Operators and Control of a Three-Level System”, *Physical Review Letters*, 114, 190502 (2015).
20. J. Jing, R. Li, J. Q. You, and T. Yu, “Nonperturbative stochastic dynamics driven by strongly correlated colored noise”, *Physical Review A* 91, 022109 (2015).
21. J. Jing and L.-A. Wu, “Overview of quantum memory protection and adiabaticity induction by fast signal control”, *Science Bulletin* 60, 328 (2015).
22. J. Jing, P. Huang, and X. Hu, “Decoherence of an electrically driven spin qubit”, *Physical Review A* 90, 022118 (2014).
23. J. Xu, X. Zhao, J. Jing, L.-A. Wu, and T. Yu, “Perturbation methods for the non-Markovian quantum state diffusion equation”, *J. Phys. A: Math. Theor.* 47, 435301 (2014).

24. J. Jing, C. Allen Bishop, and L.-A. Wu, “Nonperturbative dynamical decoupling with random control”, *Scientific Reports* 4, 6229 (2014).
25. X. Zhao, J. Jing, J. Q. You, and T. Yu, “Dynamics of coupled cavity arrays embedded in a non-Markovian bath”, *Quantum Information and Computation* 14, 0741 (2014).
26. J. Jing, L.-A. Wu, T. Yu, J. Q. You, Z.-M. Wang, and L. Garcia, “One-component dynamical equation and noise-induced adiabaticity”, *Physical Review A* 89, 032110 (2014).
27. J. Jing, L.-A. Wu, M. S. Sarandy, and J. G. Muga, “Inverse engineering control in open quantum systems”, *Physical Review A* 88, 053422 (2013).
28. J. Jing, X. Zhao, J. Q. You, W. T. Strunz, and T. Yu, “Many-body quantum trajectories of non-Markovian open systems”, *Physical Review A* 88, 052122 (2013).
29. J. Jing and L.-A. Wu, “Control of decoherence with no control”, *Scientific Reports* 3, 2746 (2013).
30. W. Shu, X. Zhao, J. Jing, L.-A. Wu, and T. Yu, “Uhrig dynamical control of a three-level system via non-Markovian quantum state diffusion”, *J. Phys. B: At. Mol. Opt. Phys.* 46, 175504 (2013).
31. J. Jing, L.-A. Wu, J. Q. You and T. Yu, “Nonperturbative quantum dynamical decoupling”, *Physical Review A* 88, 022333 (2013).
32. C. J. Curtis, J. Jing, T. Yu, and J. H. Eberly, “Solving non-Markovian open quantum systems with multi-channel reservoir coupling”, *Annals of Physics* 327, 1962 (2012).
33. A. Veitia, J. Jing, T. Yu, and C. W. Wong, “Mutual preservation of entanglement”, *Physics Letters A* 376, 2577 (2012).
34. Z.-M Wang, L.-A. Wu, J. Jing, B. Shao, and T. Yu, “Nonperturbative dynamical decoupling control: A spin-chain model”, *Physical Review A* 86, 032303 (2012).
35. J. Jing, X. Zhao, J. Q. You, and T. Yu, “Time-local quantum-state-diffusion equation for multilevel quantum systems”, *Physical Review A* 85, 042106 (2012).
36. J. Jing, L.-A. Wu, J. Q. You, and T. Yu, “Feshbach projection operator partitioning for quantum open systems: Stochastic approach”, *Physical Review A* 85, 032123 (2012).
37. J. Xu, J. Jing, and T. Yu, “Entanglement dephasing dynamics driven by a bath of spins”, *J. Phys. A: Math. Theor.* 44, 185304 (2011).
38. J. Jing and T. Yu, “Stochastic Schroedinger equation for a Non-Markovian dissipative qubit-qutrit system”, *Europhysics Letters* 96, 44001 (2011).

39. X. Zhao, J. Jing, B. Corn, and T. Yu, “Dynamics of interacting qubits coupled to a common bath: Non-Markovian quantum-state-diffusion approach”, *Physical Review A* 84, 032101 (2011).
40. J. Jing and T. Yu, “Non-Markovian Relaxation of a Three-Level System: Quantum Trajectory Approach”, *Physical Review Letters* 105, 240403 (2010).
41. Z. Ficek, J. Jing, and Z. G. Lv, “Role of the counter-rotating terms in the creation of entanglement between two atoms”, *Physica Scripta T140*, 014005 (2010).
42. P. H. Zhang, J. Jing, and G. H. Yang, “Thermal entanglement of the two-qubit Heisenberg spin chain coupled to a single-mode cavity field”, *International Journal Theoretical Physics* 49, 2517 (2010).
43. J. Jing, Z. G. Lv, and Z. Ficek, “Breakdown of the rotating-wave approximation in the description of entanglement of spin-anticorrelated states”, *Physical Review A* 79, 044305 (2009).
44. J. Jing, Z. G. Lv, H. R. Ma, “Quantum dynamics of double-qubit in a spin star lattice with an XY interaction”, *Modern Physics Letter B* 23, 911 (2009).
45. J. Jing, Z. G. Lv, H. R. Ma and H. Zheng, “Position-dependent Dynamics of the two qubits in a leakage cavity”, *J. Phys. B: At. Mol. Opt. Phys.* 41, 135502 (2008).
46. J. Jing and H. R. Ma, “Level crossing and quantum phase transition of the XY ring”, *Modern Physics Letter B* 22, 535 (2008).
47. J. Jing, Z. G. Lv, and G. H. Yang, “Non-local dynamics of Bell states in separate cavities”, *Physics Letters A* 372 2183, (2008).
48. J. Jing, Z. G. Lv, X. Z. Yuan, and H. R. Ma, “Spectator model dynamics in a leakage cavity”, *Chinese Physics Letters* 25, 3119 (2008).
49. J. Jing, Z. G. Lv, and G. H. Yang, “Controllable dynamics of two separate qubits in Bell states”, *Physical Review A* 76, 032322 (2007).
50. J. Jing and Z. G. Lv, “Dynamics of two qubits in a spin bath with anisotropic XY coupling”, *Physical Review B* 75, 174425 (2007).
51. J. Jing and H. R. Ma, “Suppression of decoherence by bath ordering”, *Chinese Physics* 16, 1489 (2007).
52. J. Jing and H. R. Ma, “Polynomial scheme for numerical simulations of the spin-bath decoherence”, *Physical Review E* 75, 016701 (2007).

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- Shanghai Education Foundation for Young Teachers

Professional Service

- Coordinate of the “quantum information” division of “the Fall meeting of Chinese Physical Society in 2015” (CPS2015): September 10 – September 13, 2015, Changchun, Jilin, China
Website: <http://cps2015jlu.cpsjournals.cn/CN/column/column2.shtml>.
- Coordinate of “The 3rd International Workshop on Entanglement, Decoherence and Quantum Control” (EDC2012): June 12 – June 14, 2012, Shanghai, China
Website: <http://www.edc2012.shu.edu.cn>.
- Coordinate of “Stevens Symposium on Quantum Open System”: May 5 – May 6, 2012, Hoboken, New Jersey, USA
Website: <http://www.stevens.edu/ccqs/ssqs/>