

## Jun Jing

Email : [jingjun@shu.edu.cn](mailto:jingjun@shu.edu.cn)  
or : [arthurking79@hotmail.com](mailto:arthurking79@hotmail.com)  
Tel : +86-21-66136202  
Mobile : +86-13585643140  
Blog : <http://freistatt.spaces.live.com>

## Current Address

Physics department,  
Shanghai University,  
99 Shangda Road, Baoshan, Shanghai,  
200444, China

## Personal data

Gender : Male  
Birth date : 1979.10.10  
Major : Theoretical Physics  
Marital status : Single

## Education

- Shanghai University: Apr. 2007 – Present  
Ph.D. and Lecturer
- Shanghai Jiao Tong University: Sept. 2002 – Mar. 2007  
Ph.D. candidate in Theoretical Physics (Adviser: Prof. Hongru Ma)
- Shanghai Jiao Tong University: Mar. 2000 – Jun. 2002  
Second B.S. degree in Applied Electronics
- Shanghai Jiao Tong University: Sept. 1998 – Jun. 2002  
B.S. degree in Applied Physics (Adviser: Prof. Hongru Ma)

## Research Experience

- PhD Projects  
Study of some questions of the dissipation of open quantum system
- Undergraduate Project  
Computational study of Canonical Monte Carlo Simulations in statistic physics

## Research Interests

- Quantum decoherence and disentanglement process in Quantum information
- Numerical simulation method on the evolution of the reduced density matrix
- Applications of Monte Carlo simulation in condensed matter physics and statistic physics

## Published

Jun Jing and Hong-ru Ma, "Polynomial scheme for numerical simulations of the spin-bath decoherence", PHYSICAL REVIEW E 75, 016701 (2007)

Jun Jing and Hong-ru Ma, "Suppression of decoherence by bath ordering", Chinese Physics 2007/16(06)/1489-16

Jun Jing and Zhi-Guo. Lu, "Dynamics of two qubits in a spin bath with anisotropic XY coupling", PHYSICAL REVIEW B 75, 174425 (2007)

## Skills

- Theoretical Physics:
  - Having a solid foundation on quantum physics, statistical physics, condensed-matter physics and computational physics
- Computer Application and Programming:
  - Proficient in Unix/Linux/Windows OS
  - Programming with FORTRAN and C/C++ Languages
  - Matlab/Maple in Unix/Linux/Windows
  - L<sup>A</sup>T<sub>E</sub>X/Metapost/Scilab
- English:
  - Excellent abilities of listening, reading and writing English (College English Test Band 6 and CET oral Test Band B)

## Statement

During the undergraduate period, I was the acceptor of many merit scholarship which supported almost half of my college expenses. In 2002, I was honored to be selected without

examination to begin a graduate program in the Theoretical Physics Institute of our department.

From 2002 to 2004, I spent about 2 years in course work on fundamental knowledge and methods in the many areas of theoretical physics including Computational Condensed Matter Physics, Solid State Physics, Advanced Quantum Mechanics, Advanced Statistical Physics, Multi-Particle Quantum Physics, Quantum Information, Group Theory, etc. I received high grades in all these courses. Under the direction of my advisor, I acquire a high degree of expertise in some important computation methods, such as the Monte Carlo simulation method and molecule dynamics. During that time, I participated in some of the research work of my advisor's group in the field of soft-matter physics and polymer physics.

In 2004, I decided to use what I have learned and apply it to the theoretical research in quantum computation, where I was mostly interested in the problems of quantum entanglement and decoherence of composite quantum system. I started my work by modeling a two-level system coupled with a harmonic oscillator or spin bath and tried to find out the dynamics of the density matrix or the evolution of the system. And the next step I have taken is to generalize the model to the decay of a system's initial pure state into a mixture of several states caused by the interaction of the system with its environment. Then I focused my own attention into the Markovian type or Non-Markovian behavior of the reduced system dynamics. I try to write the model into the Lindblad equation and make use of some important methods such as polynomial expansion and quantum jump to study the behavior of the open quantum system. Up to now, I have finished two original research papers. I have gotten my PhD degree in the spring of 2007.

I would like to apply for a postdoctoral position in your group to further my research in the field of quantum computation. Definitely, I believe that there are fundamental problems in the entanglement and decoherence phenomena and the quantum computation may not be realized if these problems can not be satisfactorily resolved. I would like to participate into the work in any group as you will arrange because I am sure that my hardworking and persevering personality will help me do some exciting work in you group.