

杨立平博士

个人基本信息

姓名： 杨立平
性别： 男
出生年月： 1987 年 10 月
邮箱： yanglp710@nenu.edu.cn
电话：
通讯地址： 东北师范大学净月校区环境楼 B 座 501

学习经历

2005 .09 – 2009. 07, 东北师范大学, 物理系, 本科.

2009 .09 – 2014. 07, 中国科学院理论物理研究所, 量子物理专业, 博士.

工作经历

2014.07—2016. 11, 北京计算科学研究中心, 博士后.

2016.11—2020.10, 普渡大学, 电子与计算机工程学院, 博士后.

2020.11—现在, 东北师范大学, 物理学院 & 量子中心, 副教授.

研究方向

量子光子学 Quantum Photonics.

- 基于量子相变的单光子探测
- 单光子诱导的瞬态纠缠力
- 高灵敏度热光子探测器

量子缺陷系统 Defect Centers.

- 纳米尺度的量子磁力计
- 动力学解耦方法延长缺陷中心 T_2 相干时间
- 基于量子比特的量子度量学

光子角动量 Angular Momentum of Photons.

- 光子角动量全量子理论
- 单光子角动量的测量、操控、储存
- 光子自旋-轨道耦合、光子涡旋、光子自旋压缩态

发表文章记录

- h-index: 10 (7 篇文章 Google 引用超过 20 次)
- Google 总引用数 > 800
- 1. **Li-Ping Yang** and Zubin Jacob
Single-photon pulse induced giant response in $N > 100$ qubit system
npj Quantum Information **6**, 1-6 (2020)
Key result: First single-photon detector with quantum phase transitions
- 2. Chinmay Khandekar, **Li-Ping Yang**, Alejandro W. Rodriguez and Zubin Jacob
Quantum nonlinear mixing of thermal photons to surpass the blackbody limit
Opt. Express **28**, 2045 (2020)—(Highlighted as an Editor's Pick)
Key result: Nonlinear enhancement of thermal emission beyond the well-known black-body limits associated with linear media
- 3. **Li-Ping Yang**, Chinmay Khandekar, Tongcang Li, and Zubin Jacob
Single-photon pulse induced transient entanglement force
New J. Phys. **22**, 023037 (2020)
- 4. Saman Jahani, **Li-Ping Yang**, Adrian Buganza Tepole, Joseph C. Bardin, Hong X. Tang, and Zubin Jacob
Probabilistic vortex crossing criterion for superconducting nanowire single-photon detectors
J. Appl. Phys. **127**, 143101 (2020)
- 5. **Li-Ping Yang** and Zubin Jacob
Engineering First-Order Quantum Phase Transitions for Weak Signal Detection
J. Appl. Phys. **126**, 174502 (2019)
- 6. **Li-Ping Yang** and Zubin Jacob
Quantum critical detector: amplifying weak signals using discontinuous quantum phase transitions
Opt. Express **27**, 10482 (2018)
Key result: First quantum analog of classical critical detectors, such as Wilson chamber, Bubble chamber, superconducting nanowire single-photon detector
- 7. Hao Fu, Zhi-cheng Gong, **Li-ping Yang**, Tian-hua Mao, Chang-pu Sun, Su Yi, Yong Li, and Geng-yu Cao
Coherent Optomechanical Switch for Motion Transduction Based on Dynamically Localized Mechanical Modes
Phys. Rev. Appl. **9**, 054024 (2018)
- 8. **Li-Ping Yang**, Hong X Tang, and Zubin Jacob
Concept of quantum timing jitter and non-Markovian limits in single photon detection
Phys. Rev. A **97**, 013833 (2018)
Key result: Fundamental limit of the timing jitter in single-photon detection
- 9. Yulin Wu, **Li-Ping Yang**, Yarui Zheng, Hui Deng, Zhiguang Yan, Yanjun Zhao, Keqiang Huang, William J Munro, Kae Nemoto, Dong-Ning Zheng, CP Sun, Yu-xi Liu, Xiaobo Zhu, and Li Lu
An efficient and compact switch for quantum circuits
npj Quantum Information **4**, 50 (2018)
- 10. Lei Xu and **Li-Ping Yang**
Super-sensitivity in Dynamics of Ising Model with Transverse Field: From Perspective of Franck-Condon Principle
Communications in Theoretical Physics **70**, 808 (2018).
- 11. Stefano Chesi, **Li-Ping Yang**, and Daniel Loss
Dephasing due to nuclear spins in large-amplitude electric dipole spin resonance
Phys. Rev. Lett. **116**, 066806 (2016)
- 12. Hui Yang, **Li-Ping Yang**, and Tai-Yu Zheng
Electronic Casimir-Polder Force in a One-dimensional Tight-Binding Nanowire at Finite Temperature
Communications in Theoretical Physics **66**, 541 (2016).
- 13. Matthias Widmann, Sang-Yun Lee, Torsten Rendler, Nguyen Tien Son, Helmut Fedder, Seoyoung Paik, **Li-Ping Yang**, Nan Zhao, Sen Yang, Ian Booker, Andrej Denisenko, Mohammad Jamali, S Ali Momenzadeh, Ilja Gerhardt, Takeshi Ohshima, Adam Gali, Erik Janzén, Jörg Wrachtrup
Coherent control of single spins in silicon carbide at room temperature
Nature materials **14**, 164 (2015).

Key result: First work shows that defects in silicon carbide can have long T_2 time comparable to nitrogen vacancies

14. **Li-Ping Yang** and C. P. Sun
Indirect control of spin precession by electric field via spin-orbit coupling
Eur. Phys. J. B **88**, 35 (2015)
15. **Li-Ping Yang**, Christian Burk, Matthias Widmann, Sang-Yun Lee, Jörg Wrachtrup, and Nan Zhao
Electron Spin Decoherence in Silicon Carbide Nuclear Spin Bath
Phys. Rev. B **90**, 241203(R) (2014)

Key result: We predict and explain the long T_2 time of defects in silicon carbide, which has been verified in experiments.

16. Yusuf Turek, **Li-Ping Yang**, W. Maimaiti, Y. Li, and C. P. Sun
Indirect driving of a cavity-QED system and its induced nonlinearity
Phys. Rev. A **90**, 013836 (2014)
17. C. Y. Cai, **Li-Ping Yang**, and C. P. Sun
Threshold for Non-Thermal Stabilization of Open Quantum Systems
Phys. Rev. A **89**, 012128 (2014)
18. Sheng-Wen Li, **Li-Ping Yang**, and C. P. Sun
Long-term effect of inter-mode transitions in quantum Markovian process
Eur. Phys. J. D **68**, 45 (2014)
19. Lan Zhou, **Li-Ping Yang**, Yong Li, and C. P. Sun
Quantum Routing of Single Photons with a Cyclic Three-Level System
Phys. Rev. Lett. **111**, 103604 (2013)
Key result: First quantum multi-channel router for single photons
20. **Li-Ping Yang**, C. Y. Cai, D. Z. Xu, Wei-Min Zhang and C. P. Sun
Master equation and dispersive probing of a non-Markovian process
Phys. Rev. A **87**, 012110 (2013)
21. **Li-Ping Yang** Yong Li, and C. P. Sun
Franck-Condon effect in central spin system
Eur. Phys. J. D **66**, 300 (2012)
22. **Li-Ping Yang**, Qing Ai, and C. P. Sun
Generalized Holstein model for spin-dependent electron-transfer reactions
Phys. Rev. A **85**, 032707 (2012)
23. Yong Li, Lian-Ao Wu, Ying-Dan Wang, and **Li-Ping Yang**
Nondeterministic ultrafast ground-state cooling of a mechanical resonator
Phys. Rev. B **84**, 094502 (2011)

学术报告

- *Quantum spin operator of the photon*
IOP Quantum 2020, Online, Oct. 19, 2020
- *Single-Photon Detection Using Quantum Phase Transitions*,
Colloquium on the Physics of Quantum Electronics, Snowbird, USA, Jan. 2020
- *Engineering discontinuous quantum phase transitions for weak signal detection*,
Invited Talk, SPIE, San Diego, USA, Aug. 2019
- *Quantum Critical Detector: Amplifying Weak Signals Using First-Order Dynamical Quantum Phase Transitions*
Midwest Cold Atom Workshop, Urbana-Champaign, USA, Nov. 2018
- *Dynamical quantum amplifier for single-photon detection*
CLEO, San Jose, USA, May. 2018
- *Unruh Effect Meets Superconducting Single-photon Detectors*,
Colloquium on the Physics of Quantum Electronics, Snowbird, USA, Jan. 2018

审稿活动

总计审阅稿件约 20 篇，分别来自

- Nature Communications (Nature Publishing Group)—1 篇
- Physical Review Letters (APS)—4 篇
- Optica (OSA)—1 篇
- Physical Review X Quantum (APS)—1 篇
- Physical Review Applied (APS) —3 篇
- Physical Review A (APS) —2 篇
- Physical Review B (APS) —1 篇
- Optics Express (OSA) —3 篇
- Nanoscale and Microscale Thermophysical Engineering (Tyler & Francis Group) —1 篇
- Optics Letters (OSA) —2 篇
- Journal of Physics B —1 篇 (IOP)

学术访问

- Apr. 04 2015 — Apr. 09 2015
As Visitor
Max-Planck-Institut Für Quantenoptik
Collaborator: I. Cirac
- Apr. 01 2015 — Apr. 04 2015
As Visitor
Institute for Quantum Optics, Ulm University
Collaborator: F. Jelezko
- Mar. 27 2015 — Apr. 01 2015
As Visitor
3. Physikalisches Institut, Universität Stuttgart
Collaborator: J. Wrachtrup
- Jul. 1 2013 — Aug. 31 2013
As Intern
Centre for Atom Optics and Ultrafast Spectroscopy (CAOUS),
Engineering & Industrial Sciences Swinburne University of Technology, Australia

Collaborator: Xia-Ji Liu

- Oct. 29 2012 — Dec. 15 2012

As Intern

Digital Material Laboratory, Frontier Research System, RIKEN, Japan

Collaborator: F. Nori

- Jan. 20 2011 — Mar. 20 2011

As Intern

Digital Material Laboratory, Frontier Research System, RIKEN, Japan

Collaborator: F. Nori