

Yun Zhang Curriculum Vitae, Feb. 2007

Personal

Name: **Yun ZHANG**

Gender: **Male**

Date of Birth: **May 25 1972**

Marriage Status: **Married and one daughter**

Citizenship: **Chinese**

Place of Birth: **Shanxi, P. R. China**

Specific academic field: **Quantum optics, Quantum Information, Laser Physics**

Official Address: Mejiro1-5-1, Toshima-ku, Tokyo 171-8588, Japan
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Positions Held

2006,3-present, Visiting Researcher, Gakushuin University, Japan

Researcher, Japan Science and Technology Agency (JST)

2001,5- 2006,2, specialist researcher, National Institute of Information and Communications Technology (NICT), Japan

2000,5-2001,4, AIST fellow, National Institute of Advanced Industrial Science and Technology (AIST), Japan

Professional Associations:

Member, American Physical Society

Education

* 1997. 9-2000.4 Doctor of Science, Institute of Opto-Electronics, Shanxi University
Supervisors: Prof. Kunchi PENG and Prof. Changde XIE,
Thesis: Application of twin beams and the generation of nonclassical light in quantum information

* 1994. 9-1997. 7 Master of Science, Institute of Opto-Electronics, Shanxi University
Supervisors: Prof. Kunchi PENG and Prof. Changde XIE
Thesis: "Experimental Investigation on Nonclassical light".

* 1990. 9-1994. 7 Bachelor of Science, Department of Physics, Shanxi University

Scholarships and Awards

2003, K.C. Wong education foundation, Hong Kong

2002, The president funding of Communications Research Laboratory (now NICT)

2000, IET scholarship, IET committee

1999, the third Hu Chunan excellent college student scholarship,
Ministry of Education, P. R. China.

1999, Excellent student, Ministry of Education P.R.China.

1998, Excellent student, Education Committee of Shanxi Province

1997, HuaZang Excellent student scholarship, Shanxi University

Publications and Presentations

1 invited talks

39 published papers in refereed journals and edited books

More than 200 scientific journal citations (ISI Web of Science)

20 regular conference contributions in international conference

30 regular conference contributions in domestic conference

Publications

Books, Book Chapters & Special Issues

- 01 Katsuyuki Kasai and **Yun Zhang**
Quantum information and communications (in Japanese)
Optotronics publisher, 2006

Articles in international Refereed Journals

01. **Yun Zhang**, Kazuhiro Hayasaka, and Katsuyuki Kasai
“Efficient suppression of an amplified diode-laser noise by optical filter and resonant optical feedback ”
Applied Physics B **86**, 643 (2007)
02. **Yun Zhang**, Kazuhiro Hayasaka, and Katsuyuki Kasai
“Generation of two-mode bright squeezed light using a noise-suppressed amplified diode laser”
Optics Express **16** 13083 (2006)
03. **Yun Zhang**, Katsuyuki Kasai, and Kazuhiro Hayasaka
“Experimental realization of quantum correlation transfer”
Optics communications **266**, 598 (2006)
04. Yujiro Eto, Takashi Tajima, **Yun Zhang**, and Takuya Hirano
“Pulsed Homodyne Detection of Squeezed Light at Telecommunication Wavelength”
Jpn. J. Appl. Phys. **45**, L821-L823 (2006)
05. **Yun Zhang**, Katsuyuki Kasai, and Kazuhiro Hayasaka
“Conditional generation of twin sub-Possionian states”
International Journal of Modern Physics B **20**,1564-1569 (2006)
06. **Yun Zhang**, Katsuyuki Kasai, and Kazuhiro Hayasaka
“Conditional transfer of quantum correlation in the intensity of twin beams”
Phys. Rev. A **71**, 062341 (2005)
07. **Yun Zhang**, Kazuhiro Hayasaka, and Katsuyuki Kasai
“Experimental Characterization of quantum correlated twin beams and quantum channel with twin beams”
Optics and Spectroscopy, **99**, 196 (2005)
08. Kazuhiro Hayasaka, **Yun Zhang**, and Katsuyuki Kasai
“Generation of 22.8mW single-frequency green light by frequency doubling of a 50mW diode laser”
Optics Express, **12**, 3567-3572(2004)
09. Kazuhiro Hayasaka, **Yun Zhang**, and Katsuyuki Kasai

- “Generation of twin beams from an optical parametric oscillator pumped by a frequency-doubled diode laser”
Opt. Lett. **29**, 1665-1667(2004)
10. Hong FL, Ishikawa J, **Yun Zhang**, et al.
“Frequency reproducibility of an iodine-stabilized Nd:YAG laser at 532 nm”
Opt. Commun. **235**, 377-385 (2004)
11. **Yun Zhang**, Katsuyuki Kasai, and Kazuhiro Hayasaka,
“Single beam noise character of quantum correlated twin beams”
J. Opt. Soc. of Am. B **21**, 1044-1049 (2004)
12. **Yun Zhang**, Katsuyuki Kasai, Kazuhiro Hayasaka
“Quantum channel with photon number correlated twin beams”
Optics Express **11**, 3592 (2003)
13. **Yun Zhang**, Katsuyuki Kasai, and Masayoshi Watanabe
“Experimental investigation of the correlation and inference of the twin-beam quantum state”
Optics Express **11**, 14 (2003)
14. **Yun Zhang**, Katsuyuki Kasai, and Masayoshi Watanabe,
“Quantum switch teleportation with continuous variables using two-mode squeezed state”
European Journal Physics D **21**, 361 (2002)
15. Feng-Lei Hong, **Yun Zhang**, Jun Ishikawa, Atsushi Onae, Hirokazu Matsumoto
“Hyperfine structure and absolute frequency determination of the R(121)35-0 and P(142)37-0 transitions of $^{127}\text{I}_2$ near 532 nm”
Opt. Commun. **212**, 89 (2002)
16. **Yun Zhang**, Katsuyuki Kasai, and Masayoshi Watanabe,
“Investigation of the photon number statistics of twin beams by means of direct detection”
Opt. Lett. **27**, 1244 (2002)
17. **Yun Zhang**, Katsuyuki Kasai, and Masayoshi Watanabe,
“Classical and quantum properties of optical parametric amplifier/deamplifier”
Phys. Lett. A Vol. **297**, 29 (2002)
18. Feng-lei Hong, **Yun Zhang**, Jun Ishikawa, Atsushi Onae, Hirokazu, Matsumoto
“Vibration dependence of the tensor spin-spin and scalar spin-spin hyperfine interactions by precision measurement of hyperfine structures of $^{127}\text{I}_2$ near 532 nm”
J. Opt. Soc. of Am. B **19**, 946 (2002)
19. **Yun Zhang**, Jun Ishikawa, Feng-lei Hong
“Accurate frequency atlas of molecular iodine near 532nm measured by an Optical Frequency comb generator”
Opt. Commun. **200**, 209 (2001)
20. **Yun Zhang**, Hai Wang, Xiaoying Li, Jietai Jing, Changde Xie and Kunchi Peng
“Experimental Generation of bright squeezed states from Narrowband NOPA”
Physical Review A **62**, 023813 (2000)
21. Hai Wang, **Yun Zhang**, Qing Pan, Hong Su, Changde Xie and Kunchi Peng

"Experimental realization of a quantum measurement for intensity difference fluctuation using beam splitter"
Phys. Rev. Lett. **82**, 1414 (1999)

22. **Yun Zhang**, Hong Su, Changde Xie and Kunchi Peng
"Quantum Variances and Squeezing of output field from NOPA"
Phys. Lett. A **259**, 171 (1999)
23. Qing Pan, Taicai Zhang, **Yun Zhang**, Ruining Li, Kunchi Peng
"Intracavity frequency-doubled and frequency-stabilized cw ring Nd:YAP laser"
Appl. Opt. **37**, 2394 (1998)
24. Kunchi Peng, Qing Pan, Hai Wang, **Yun Zhang**, Hong Su, Changde Xie
"Generation of two-mode quadrature-phase squeezing and intensity difference squeezing from a cw-NOPO"
Applied Physics B **66**, 755 (1998)
25. Hai Wang, Qing Pan, **Yun Zhang**, Chenyang Xue, Changde Xie and Kunchi Peng
"Sub-shot-noise measurement for slight absorption"
Science in China **41**, 534 (1998)
26. Qing Pan, **Yun Zhang**, Tiancai Zhang, Changde Xie and Kunchi Peng,
"Experimental investigation of intensity difference squeezing using Nd:YAP laser as pumped source"
J. of Physics D: Applied Physics **30**, 1588 (1997)

Articles in domestic Refereed Journals

01. Ruixiang Guo, Hongliang Ma, **Yun Zhang**, Xiaoying Li, Kuanshou Zhang, and Kunchi Peng
"Experimental investigation of mini-all-solid-state system of non-classical light generation"
Acta Optica Sinica (in Chinese), **21**, 812 (2001)
02. Hong Su, **Yun Zhang**, Hai Wang, and Tiancai Zhang,
"Theoretical Analysis of nonideal phase-modulation side-band system to lock OPO cavity"
Chinese Journal of quantum Electronics (in Chinese), **18**, 297 (2001)
03. **Yun Zhang**, Tiancai Zhang, Tingyu Li and Changde Xie
"Phase Noise Measurement by F-P Cavity"
Acta Optica Sinica(in Chinese) **20**, 465 (2000)
04. Qing Pan, Hai Wang, **Yun Zhang**, Hong Su, Changde Xie and Kunchi Peng,
"Experimental Investigation about the generation system of multiple nonclassical lights"
Acta Physica Sinica (in Chinese) **47**, 1625 (1998)
05. **Yun Zhang**, Hong Su, Hai Wang and Qing Pan,
"Improvements on the characteristics of optical parametric oscillator with extra feedback cavity"
Acta Sinica Quantum Optica (in Chinese), **4**, 176 (1998)
06. Tiancai Zhang, Tingyu Li, Qing Pan, **Yun Zhang**, Changde Xie and Kunchi Peng,
"Large parametric gain from three-mode resonance cavity"
Acta Physica Sinica (in Chinese), **46**, 1744 (1997)

07. Qing Pan, **Yun Zhang**, Tiancai Zhang, Changde Xie and Kunchi Peng,
"Experimental research for intensity difference squeezed light generation at 1080nm
wavelength with low pump threshold and high conversion efficiency"
Chinese J. of Lasers (in Chinese), **A 24**, 631 (1997)
08. Jinling Zheng, Maoquan Huang and **Yun Zhang**
"Experimental method for distinguishing slight difference between thresholds of SRS and
SBS in CS₂"
Acta Sinica Quantum Optica (in Chinese), **3**, 170 (1997)
09. Kuanshou Zhang, **Yun Zhang**, Changde Xie and Kunchi Peng,
"All Solide out-of plane Nd:YAG ring laser of single frequency operation"
Acta Optica Sinica (in Chinese), **16**, 1041 (1996)
10. **Yun Zhang**, Chenyang Xue, Qing Pan, Hai Wang,
"Generation of quantum noise reduction of intensity difference"
J. of North China Institute of Technology (in Chinese) **17**, Supp. 1 (1996)

Conference proceedings

01. Kazuhiro Hayasaka, **Yun Zhang**, and Katsuyuki Kasai
Nonclassical light generation from an optical parametric oscillator pumped by a frequency-
doubled diode laser
SPIE **5631**, 143 (2005).
02. Youichi Bitou, Akiko Hirai, Hideaki Yoshimori, Fenglei Hong, **Yun Zhang**, Atsushi Onae, and
Katu Seta
"Gauge block interferometer using three frequency –stabilized lasers"
SPIE **4401**, 288 (2001).
03. Fenglei Hong, **Yun Zhang**, Jun Ishikawa, Youichi, Bitou, Atsushi Onae, Jun Yoda,
Hirokazu Matsumoto and Kenichi Nakagawa
"Frequency reproducibility of I2-stabilized Nd:YAG lasers"
SPIE **4269**, 143 (2001).
04. Hai Wang, **Yun Zhang**, Xiaoying Li, Jietai Jing, Changde Xie, and Kunchi Peng
"The small phase shift measurement using frequency degenerated twin beams"
Frontiers of laser physics and quantum optics, Edited by Z. Z. Xu, S.W.Xie S.Y.Zhu and
M.O.Scully, Springer, published in 2000.
05. **Yun Zhang**, Hai Wang, Xiaoying Li, Hong Su, Changde Xie, and Kunchi Peng
"Theoretical and experimental investigation on twin beams generation by non-degenerate
optical parametric amplifier"
Frontiers of laser physics and quantum optics, Edited by Z. Z. Xu, S.W.Xie S.Y.Zhu and
M.O.Scully, Springer, published in 2000.
06. Kunchi Peng, Hai Wang, Jiangrui Gao, **Yun Zhang**, Hong Su, Xiaoying Li Qing Pan and
Changde Xie
"Sub-shot noise measurement and quantum repeater using quantum correlated twin beams"
Frontiers of laser physics and quantum optics, Edited by Z. Z. Xu, S.W.Xie S.Y.Zhu and
M.O.Scully, Springer, published in 2000.

07. Changde Xie, Hai Wang, Qing Pan, **Yun Zhang**, and Kunchi Peng
"Generation of Nonclassical Light at 1080nm and its application"
Laser Spectroscopy, Edited by Z. J. Wang, Z. M. Zhang and Y. Z. Wang, World Scientific,
Published in 1998.
08. Kunchi Peng, Qing Pan, Tiancai Zhang, **Yun Zhang**, and Changde Xie
"Nonclassical light generation from a semimonolithic OPO pumped by Nd:YAP laser"
Frontiers of quantum optics and laser physics, Edited by S. Y. Zhu, M. S. Zubairy and M.O.
Scully, Springer, published in 1997.
09. Hai Wang, Changde Xie, Qing Pan, Chengyang Xue, **Yun Zhang** and Kunchi Peng
"Optical measurements of weak absorption beyond shot-noise-limit"
Quantum communication computing, and measurement, Edited by O. Hirota, A. S. Holevo
and C.M. Caves, Plenum press, published in 1997.

Invited talk in international conference

- 1 "measurement and application of twin beams in time domain"
X international conference on quantum optics
Minsk, Belarus, May 30- June 3, 2004

Contributed presentations in International conference

01. **Yun Zhang**, Tatsuya Furuta, Takuya Hirano
"Experimental generation of quadrature entanglement using laser pulses"
The 8th International Conference on Quantum Communication, Measurement and
Computing (QCMC 2006), In Tsukuba, Japan, Nov. 2006
02. Y. Eto, T. Tajima, **Yun Zhang** and T. Hirano
"Measurement of 3dB squeezing at telecommunication wavelength using pulsed homodyne
detector"
The 8th International Conference on Quantum Communication, Measurement and
Computing (QCMC 2006), In Tsukuba, Japan, Nov. 2006
03. **Yun Zhang**, T. Furuta, and T. Hirano
"Experiment demonstration of quadrature entanglement using laser pulse"
Asian conference on quantum information science 2006, In Beijing, Sep. 2006
04. T. Tajima, Y. Eto, **Yun Zhang**, and T. Hirano
"3dB squeezing at telecommunications wavelength using pulsed homodyne detector"
Asian conference on quantum information science 2006, In Beijing, Sep. 2006
05. **Yun Zhang** and K. Kasai
"Quantum correlation transfer using twin beams"
9th International conference on squeezed state and uncertainty relationship, in Besacon,
France May 2005
06. **Yun Zhang**, Kazuhiro Hayasaka, and Katsuyuki Kasai

“Conditional generation of twin sub-Poissonian states “
CLEO/QELS,2005

07. **Yun Zhang** and K. Kasai
“Quantum key distribution using quantum correlated twin beams”
16th International conference on laser spectroscopy, in Queensland, Australia July 2003
08. **Yun Zhang** and K. Kasai
“Joint probability and conditional probability distribution of twin beams”
CLEO-Europe /QELS2003, in Munich, Germany, June 2003
09. **Yun Zhang**, K. Kasai, M. Watanabe,
“Experimental investigation of photon statistics of twin beams”
IQEC/LAT, 2002, in Moscow, Russia, June 2002
10. **Yun Zhang**, K. Kasai, M. Watanabe
“Quantum switch teleportation with continuous variables using two-mode squeezed light”
CLEO/QELS,2002, in Long Beach, California, U.S.A., May 2002
11. Fenglei Hong, **Yun Zhang**, Jun Ishikawa, Atsushi Onae, Kazuhiko Sugiyama, Hirokazu Matsumoto and Katuo Seta
“Precision Spectroscopy of molecular iodine with highly stable and reproducible frequency-stabilized Nd:YAG lasers”
15th International conference on laser spectroscopy, in Utah, U.S.A. June 2001
12. Changde Xie, **Yun Zhang**, Hai Wang, Xiaoying Li, Jietai Jing, Kunchi Peng,
“EPR Correlation and Quantum Noise Squeezing of Output Light Fields”
CLEO@Europe-IQEC 2000 in Nice, French, 2000
13. Hai Wang, **Yun Zhang**, Qing Pan, Hong Su, Changde Xie and Kunchi Peng
“A noiseless optical tap in quantum domain based on quantum correlation of twin beams”
14th International conference on laser spectroscopy, in Innsbruck, Austria, June, 1999
14. Kunchi Peng, Hai Wang, Jiangrui Gao, **Yun Zhang**, Xiaoying Li, Qing Pan, Changde Xie
“Sub-shot-noise measurements and quantum repeater using quantum correlated twin beams”
International Conference on Laser Physics and Quantum Optics, in Wuxi, China, 1999
15. **Yun Zhang**, Wang Hai, Li Xiaoying, Su Hong, Xie Changde, Peng Kunchi
"Theoretical and experimental investigation on twin beams generation by non-degenerate optical parametric amplifier",
International Conference on Laser Physics and Quantum Optics, in Wuxi, China, 1999
16. Wang Hai, **Yun Zhang**, Li Xiaoying, Xie Changde, Peng Kunchi,
"The small phase shift measurement using frequency-degenerated twin beams",
International Conference on Laser Physics and Quantum Optics, in Wuxi, China, 1999
17. Kunchi Peng, Hai Wang, Jiangrui Gao, **Yun Zhang**, Hong Su, Xiaoying Li, Changde Xie
“Generation and application of high quantum correlated twin beams”
6th International Conference on Squeezed State and Uncertainty Relations, in Napoli, Italy, 1999

18. Xie Changde, Wang Hai, Pan Qing, **Yun Zhang**, Peng Kunchi,
"Generation of Nonclassical Light at 1080nm and its application"
13th International conference on laser spectroscopy, in Huangzhou, China 1997.
19. Peng Kunchi, Pan Qing, Zhang Tiancai, **Yun Zhang**, Xie Changde,
"Nonclassical light generation from a semimonolithic OPO pumped by Nd:YAP laser"
The international conference on quantum optics and laser physics, in HongKong China,
Jan.1997
20. Wang hai, Xie Changde, Pan Qing, Xue Chenyang, **Yun Zhang**, Peng Kunchi,
"Optical measurements of weak absorption beyond shot-noise-limit"
The 3rd international conference on quantum measurement and communication,
in Japan, 1996

Contributed presentations in domestic conference

01. K. Hayasaka, **Yun Zhang**, K. Kasai
"Generation of twin beams by diode-laser-pumped optical parametric oscillation"
The autumn meeting, 2003, The Japan society of applied physics
02. K. Kasai, **Yun Zhang**, and K. Hayasaka
"Noise characteristics of the single beams generated by a triply resonant optical parametric oscillator"
The autumn meeting, 2003, The Japan society of applied physics
03. K. Hayasaka, **Yun Zhang**, K. Kasai
"Frequency Doubling of a 1080nm diode laser in an a-cut KTP crystal"
The 50th spring meeting, 2003, The Japan society of applied physics
04. K. Kasai, Yun Zhang
7th Quantum information technology, Tokyo, Nov. 2002.
05. K. Kasai, Yun Zhang,
The autumn meeting, 2002, In Nigada, The Japan society of physics
06. K. Kasai, **Yun Zhang**, M.Watanabe
"observation of the photon number distribution of twin photon beams"
6th Quantum information technology, Kyoto, May. 2002.
07. **Yun Zhang**, K.Kasai, M.Watanabe
"Measurement of photon number statistics of twin beams"
The 49th spring meeting, 2002, The Japan society of applied physics
08. **Yun Zhang**, K. Kasai, M. Watanabe
"quantum switch teleportation with continuous variables using two-mode squeezed state"
The 22nd laser meeting, 2002, the laser society of Japan
09. Fenglei Hong, **Yun Zhang**, Jun Ishikawa, Atsushi Onae, Hirokazu, Matsumoto
"Hyperfine structures of iodine near 532nm measured by an optical frequency comb generator"
The 49th spring meeting, 2002, The Japan society of physics

10. Junji Hirata, Jing Zhang, **Yun Zhang**, Jun Ishikawa, Fenglei Hong
 “ Frequency stability of ring Nd:YVO4 laser ”
 The autumn meeting, 2001, The Japan society of physics
11. Fenglei Hong, **Yun Zhang**, Jun Ishikawa
 “accurate frequency atlas of molecular iodine measured by optical frequency comb generator”
 The 62nd autumn meeting, 2001, The Japan society of applied physics
12. K. Kasai, **Yun Zhang**, M. Watanabe,
 “Development of a continuously frequency-tunable OPO with a differential compound ”
 The 62nd autumn meeting, 2001, The Japan society of applied physics
13. Fenglei Hong, Jun Ishikawa, **Yun Zhang**, Youichi Bitou
 “New improvements of iodine-stabilized Nd:YAG lasers”
 The 48th spring meeting, 2001, The Japan society of applied physics
14. M. Machiya, S. Terada, **Yun Zhang**, J. Ishikawa, K. Okumura, F. L. Hong
 “Single frequency tunable Nd:YVO4 laser for practical frequency standards”
 The 48th spring meeting, 2001, The Japan society of applied physics
15. **Yun Zhang**, Hai Wang, Xiaoying Li, Jietai Jing, Changde Xie and Kunchi Peng
 “Experiment generation of bright squeezed state from a narrow-band NOPO ”
 The 9th quantum optics conference, 2000, Taiyuan, P.R. China
16. Qing Pan, Hai Wang, **Yun Zhang**, Hong Su, Changde Xie, and Kunchi Peng,
 “the generation and application of squeezed state”
 The 8th quantum optics conference, 1998, Xi’an, P.R. China
17. Hai Wang, **Yun Zhang**, Hong Su, Qing Pan, Changde Xie, and Kunchi Peng
 “the investigation of quantum measurement fro intensity difference fluctuation using a beam spliter”
 The 8th quantum optics conference, 1998, Xi’an, P.R. China
18. Qing Pan, **Yun Zhang**, Tiancai Zhang, Changde Xie, and Kunchi Peng,
 “Generation of intensity difference squeezing using semimonolithic pumped by Nd:YAP laser”
 The 7th quantum optics conference, 1996, Changsha, P.R. China
19. Kuanshou Zhang, **Yun Zhang**, Changde Xie and Kunchi Peng,
 "All Solide out-of plane Nd:YAG ring laser of single frequency operation"
 The seventh quantum optics conference, 1996, Changsha, P.R. China