



物理系概况

师资队伍

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## 陈理想

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### 个人信息

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### 研究领域

陈理想副教授目前主要从事非线性光学、量子光学和量子信息等领域的研究，包括：

- (1) 光子动量、自旋和轨道角动量的纠缠调控
- (2) 非线性光学超晶格中的级联非线性光学效应
- (3) 基于光子角动量的高维量子信息协议的实现
- (4) 基于超纠缠系统的量子成像研究

量子光学实验室热忱欢迎对光学感兴趣的学子们加盟！ **Email: chenlx@xmu.edu.cn; Tel/Fax: 0592-2183587**

### 个人简历

2010.7-至今，厦门大学物理与机电工程学院物理系，副教授，硕士研究生导师  
 2009.9-2010.2，英国University of Glasgow，联合培养博士生/Honor Senior Research Associate  
 2005.9-2010.6，中山大学光电材料与技术国家重点实验室，硕博连读，理学博士

陈理想副教授作为第一作者/通讯作者在国际权威光学期刊Optics Letters, Optics Express, Physical Review A等发表了一系列高水平论文。相关工作被Nature China评述为来自中国大陆和香港地区学者的最新研究亮点。另有10篇论文被Virtual Journal of Quantum Information收录。2010年10月，由于在光子角动量调控研究取得的突出成果，个人被中国光学学会授予第七届“饶毓泰基础光学奖”。博士论文获得2011年度广东省优秀博士论文。现为美国光学学会Optics Express, Applied Optics等期刊的评审人。教学方面，曾获得厦门大学第六届青年教师教学技能大赛一等奖。

热忱欢迎你报考我的研究生！（每年招收光学、凝聚态物理或理论物理方向的硕士研究生2-3名）欢迎大三四大本科生来实验室进行毕业论文工作。

### 在研基金

- (1) 国家自然科学基金青年科学基金项目：基于光子轨道角动量的量子纠缠调控与高维量子信息处理（主持）
- (2) 福建省自然科学基金青年创新项目：光子角动量的高维量子纠缠调控（主持）
- (3) 厦门大学基础创新科研基金：光子角动量与量子纠缠调控的实验研究（主持）
- (4) 教育部博士点基金新教师类：光子自旋-轨道角动量的交互作用（主持）

### 发表文章

- [1] X. Lu and L. Chen\*, "Anisotropic dynamics of optical vortex-beam propagating in biaxial crystals: a numerical method based on asymptotic expansion," *Optics Express* (Accepted, 2013). (15 pages)
- [2] L. Chen\* and J. Romero, "Hardy's nonlocality proof using twisted photons," *Optics Express* 20, 21687-21692 (2012).
- [3] L. Chen\* and Q. Wu, "High-dimensional entanglement concentration of twisted photon pairs," *Laser Physics Letters* 9, 759-764 (2012).
- [4] X. Lu and L. Chen\*, "Spin-orbit interactions of a Gaussian light propagating in biaxial crystals," *Optics Express* 20, 11753-11766 (2012). (14 pages)
- [5] L. Chen\*, "Comblike entangled spectrum for composite spin-orbit modes from hyperconcentration," *Physical Review A* 85, 012311 (2012).

### 科研团队

理论物理与天体物理学科群

凝聚态物理学科群

光子学微电子学科群

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基础物理教学实验室

物理学专业实验室

### 常用链接

厦门大学

物理与机电学院

电子科学系

机电工程系

航空系



[6] **L. Chen\***, X. Lu, and Z. Cheng, "Violation of a Bell inequality in two-dimensional spin-orbit hypoentangled subspaces," *Journal of the Optical Society of America B* 28, 2915 (2011).

[7] **L. Chen\*** and W. She, "Spin-orbit-path hybrid Greenberger-Horne-Zeilinger entanglement and open-destination teleportation with multiple degrees of freedom," *Physical Review A* 83, 032305 (2011).

[8] **L. Chen\*** and W. She, "Hybrid entanglement swapping of photons: Creating the orbital angular momentum Bell states and Greenberger-Horne-Zeilinger states," *Physical Review A* 83, 012306 (2011).

[9] **L. Chen**, J. Leach, B. Jack, M. Padgett, S. Franke-Arnold, and W. She, "High-dimensional quantum nature of ghost angular Young's diffraction," *Physical Review A* 82, 033822 (2010).

[10] 陈理想, 光子角动量调控及其在量子信息中的应用, 第十四届全国基础光学与光物理研讨会, 2010年11月, 厦门 (获奖邀请报告).

[11] **L. Chen** and W. She, "Single-photon spin-orbit entanglement violating a Bell-like inequality," *Journal of the Optical Society of America B* 27, A7 (2010).

[12] H. Tang, **L. Chen**, and W. She, "The spatially varying polarization of a focused Gaussian beam in quasi-phase-matched superlattice under electro-optic effect," *Optics Express* 18, 25000 (2010).

[13] X. Zeng, **L. Chen**, H. Tang, B. Zhang, D. Zhong, and W. She, "Electro-optic coupling of wide wavelength range in linear chirped-periodically poled lithium niobate and its applications," *Optics Express* 18, 5061 (2010).

[14] E. Karimi, J. Leach, S. Slussarenko, B. Piccirillo, L. Marrucci, **L. Chen**, W. She, S. Franke-Arnold, M. J. Padgett, and E. Santamato, "Spin-orbit hybrid entanglement of photons and quantum contextuality," *Physical Review A* 82, 022115 (2010).

-----**Selective Publications before 2010**-----

[1] **L. Chen** and W. She, "Teleportation of a controllable orbital angular momentum generator," *Physical Review A* 80, 063831 (2009).

[2] **L. Chen** and W. She, "Encoding orbital angular momentum onto multiple spin states based on a Huffman tree," *New Journal of Physics* 11, 103002 (2009).

[3] **L. Chen** and W. She, "Increasing Shannon dimensionality by hyperentanglement of spin and fractional orbital angular momentum," *Optics Letters* 34, 1855 (2009).

[4] **L. Chen** and W. She, "Electrically tunable and spin-dependent integer or non-integer orbital angular momentum generator," *Optics Letters* 34, 178 (2009).

[5] **L. Chen** and W. She, "Sorting photons of different rotational Doppler shifts (RDS) by orbital angular momentum of single-photon with spin-orbit-RDS entanglement," *Optics Express* 16, 14629 (2008).

[6] **L. Chen** and W. She, "Electro-optically forbidden or enhanced spin-to-orbital angular momentum conversion in a focused light beam," *Optics Letters* 33, 696 (2008).

[7] **L. Chen**, G. Zheng, and W. She, "Electrically and magnetically controlled optical spanner based on the transfer of spin angular momentum of light in an optically active medium," *Physical Review A(Rapid communications)* 75, R061403 (2007). ([Research Highlights in Nature China](#)).

[8] **L. Chen** and W. She, "Arbitrary-to-linear or linear-to-arbitrary polarization controller based on Faraday and Pockels effects in a single BGO crystal," *Optics Express* 15, 15589 (2007).

[9] **L. Chen** et al, "Electrically controlled transfer of spin angular momentum of light in an optically active medium," *Optics Letters* 31, 3474 (2006).