

VINCENZO D'AMBROSIO  
CURRICULUM VITAE

### General Information

**Full Name:**

**Date of Birth:**

**Place of Birth:**

**Citizenship:**

**Permanent Address:**

da (CE) Italy

**Mobile Phone Number:**

**e-mail:**

**Spoken Languages:**

### Present position

PhD student (third year)  
Quantum Optics Group  
Dipartimento di Fisica  
Sapienza Università di Roma  
P.le Aldo Moro 2  
00185 Roma, Italy

### Education

**Type:** Visiting PhD Student

**Date:** 1 May - 5 July 2013

**Institution:** Glasgow University (Optics Group)

**Type:** Laurea Specialistica in Fisica (Curriculum Struttura della Materia)

**Date:** 22 Jul 2010

**Institution:** University of Naples "Federico II"

**Thesis:** "Sviluppo di dispositivi ottici innovativi per la manipolazione del momento angolare orbitale della luce"

**Degree:** 110/110 e lode

**Type:** Laurea Triennale in Fisica

**Date:** 23 Mar 2007

**Institution:** University of Naples "Federico II"

**Thesis:** "Multiplotti protone-neutrone nei nuclei dispari-dispari"

**Degree:** 110/110 e lode

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## Teaching Experience

**Type:** PON project expert  
**Date:** 23 Mar - 21 May 2010  
**Institution:** Istituto comprensivo "A. Calcara" via G.B. Novelli 36, 81025 Marcianise (CE)

## Grants

2012 Borsa di Avvio alla Ricerca (Sapienza Università di Roma)  
2011-2013 PhD scholarship (Doctoral School Vito Volterra)  
2004 - 2005 Edisu Scholarship

## Summary of Scientific Achievements

**Papers:** 9  
**Proceedings:** 2

**Total Impact Factor:** 43,159  
**Total Citations:** 62  
**Average Citations per Product:** 5,64  
**Hirsch (H) index:** 5  
**Normalized H index:** 1,67

### Scientific Collaborations:

During my PhD I'm having the opportunity to collaborate with several international research groups involved in an european project called PHORBITECH ([www.phorbitech.eu](http://www.phorbitech.eu)). Such project is focused on the study of optical orbital angular momentum and the development of a toolbox for the manipulation of this degree of freedom. In particular I spent two months in the Optics group of Glasgow University, and I'm going to visit Quantum Optics group at ICFO (Barcelona) for a joint experiment of this group and my current one (Quantum Optics group of Sapienza University).

### List of Publications:

- [1] *Physical Review X* 3, 011012 (2013)  
"Experimental Implementation of a Kochen-Specker Set of Quantum Tests"  
V. D'ambrosio, I. Herbauts, E. Amselem, E. Nagali, M. Bourennane, F. Sciarrino and A. Cabello
- [2] *Nature Communications* 3:961 DOI:10.1038/ncomms1951 (2012)  
"Complete experimental toolbox for alignment-free quantum communication"  
V. D'ambrosio, E. Nagali, S.P. Walborn, L. Aolita, S. Slussarenko, L. Marrucci and F. Sciarrino
- [3] *Scientific Reports* 2, 443; DOI:10.1038/srep00443 (2012)  
"Testing sequential quantum measurements: how can maximal knowledge be extracted?"  
E. Nagali, S. Felicetti, P.L. de Assis, V. D'ambrosio, R. Filip, and F. Sciarrino

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[4] *Physical Review Letters* **108**, 090501 (2012)  
"Experimental observation of impossible-to-beat quantum advantage on a hybrid photonics system"  
E. Nagali, V. D'Ambrosio, F. Sciarrino and A. Cabello

[5] *Optics Letters*, Vol.37, Issue 2, pp.172-174 (2012)  
"Deterministic qubit transfer between orbital and spin angular momentum of single photons"  
V. D'Ambrosio, E. Nagali, C. H. Monken, S. Slussarenko, L. Marrucci and F. Sciarrino

[6] *The European Physical Journal – Special Topics*, Volume 199 Number 1, 149-158 (2011)  
"Optimization of a low cost SLM for diffraction efficiency and ghost order suppression"  
R. Bowman, V. D'Ambrosio, E. Rubino, O. Jedrkiewicz, P. Di Trapani and M. J. Padgett

[7] *Physical Review A* **84**, 030302(R) (2011)  
"Hybrid ququart-encoded quantum cryptography protected by Kochen-Specker contextuality"  
A. Cabello, V. D'Ambrosio, E. Nagali and F. Sciarrino

[8] *Optics Express* Vol. 18, Iss. 26, pp. 27205–27216 (2010)  
"The Polarizing Sagnac Interferometer: a tool for light orbital angular momentum sorting and spin-orbit photon processing"  
S. Slussarenko, V. D'Ambrosio, B. Piccirillo, L. Marrucci, and E. Santamato

[9] *Applied Physics Letters* **97**, 241104 (2010)  
"Photon spin-to-orbital angular momentum conversion via an electrically tunable q-plate"  
B. Piccirillo, V. D'Ambrosio, S. Slussarenko, L. Marrucci and E. Santamato

**Conference Proceedings:**

[10] *Proceedings SPIE* **8440**, 8440F (2012)  
"Orbital angular momentum for quantum information processing"  
V. D'Ambrosio, E. Nagali, F. Sciarrino and L. Marrucci

[11] *AIP Conference Proceedings* **1424**, 324 (2012)  
"Fundamental tests on higher quantum dimensionality by exploiting the photonics orbital angular momentum"  
E. Nagali, V. D'Ambrosio, L. Marrucci and F. Sciarrino

**Preprints:**

[12] *arXiv:1306.1606*  
"Photonic polarization gears for ultra-sensitive angular measurements"  
V. D'Ambrosio, N. Spagnolo, L. Del Re, S. Slussarenko, Y. Li, L. C. Kwek, L. Marrucci, S.P. Walborn, L. Aolita and F. Sciarrino

[13] *arXiv:1304.4081*  
"Test of mutually unbiased bases for six-dimensional photonic quantum systems"  
V. D'Ambrosio, F. Cardano, E. Karimi, E. Nagali, E. Santamato, L. Marrucci and F. Sciarrino



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**List of Conferences:**

**Talks:**

*5 July 2011*

“Optimization of a low cost SLM for diffraction efficiency and ghost order suppression” (Talk)

Stella Summer School 2011 - Como (Italy)

*3 July 2012*

“Hybrid single photon multidimensional systems as a resource for fundamental quantum mechanics and quantum communication” (Talk)

Central European Workshop on Quantum Optics 2012 - Sinaia (Romania)

*25 August 2012*

“Hybrid single photon multidimensional systems as a resource for fundamental quantum mechanics and quantum communication” (Talk)

Summer School on Quantum and Non-Linear Optics 2012 - Sandbjerg Estate (Denmark)

*19 September 2012*

“Sistemi multidimensionali ibridi a singolo fotone e loro applicazioni in meccanica quantistica fondamentale e comunicazione quantistica” (Talk)

XCVIII Congresso Nazionale Società Italiana di Fisica - Napoli (Italy)

*16 April 2013*

“Photonic hybrid multidimensional systems and their application in fundamental quantum mechanics and quantum communication” (Talk)

Spie Optics + Optoelectronics 2013 - Prague (Czech Republic)

*6 June 2013*

“Photonic polarization gears for ultra sensitive angular measurements” (Talk)

PHORBITECH workshop - Glasgow (UK)

*17 June 2013*

“Complete experimental toolbox for alignment-free quantum communication” (Talk)

CEWQO 2013 20th Central European Workshop on Quantum Optics - Stockholm (Sweden)

**Posters:**

*4 February 2013*

“Complete experimental toolbox for alignment-free quantum communication” (Poster)

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QSNOW2013 Winter School in Quantum Communications - Asiago (Italy)

*13 May 2013*

“Complete experimental toolbox for alignment-free quantum communication” (Poster)  
CLEO/Europe-IQEC Conference - Munich (Germany)

*3 June 2013*

“Photonic qudits and their application in fundamental quantum mechanics and quantum information” (Poster)  
ICOAM 2013 Second international conference on optical angular momentum - Glasgow (UK)

### **Other activities**

#### **Education:**

*July 1999*

Diploma “Upper Intermediate” at English Summer School by STS (Student Travel Schools)  
- Southampton (UK)  
58/64

*June 2009*

Earning of ECDL (European Computer Driving Licence)  
at Centro formazione maestranze edili di Caserta (Test Center Code: NT01)

*March 2013*

Accomplishment with distinction of Coursera online course “Introduction to Digital Sound Design” by Professor Steve Everett of Emory University.

*April 2013*

Accomplishment of Coursera online course “Introduction to Music Production” by Professor Loudon Stearns of Berklee College of Music.

#### **Working activities:**

October 2002 - June 2003

Technical director of a radiophonic show (New Radio Network)

#### **Hobbies:**

Musician (guitar, drums, piano, bass)

Activity in intercultural youth exchange programs (European project Youth in Action)

16 July 2013