

## University Academic Curriculum Vitae

<b>Personal information</b>	
Name: personal data: Address: tel.: email:	Leonardo Colletti ----- ----- ----- leonardo.colletti@unitn.it
<b>Education since leaving school</b>	
12.9.2018  25.3.2015  2.5.2001  26.11.1996	National Scientific Qualification for Associate Professorship in the sector 02/D1 “Applied physics, history and didactics of physics”  M. Phil. in Philosophy – Università degli Studi di Trento “110/110 cum laude”  Ph. D. in Physics – Università degli Studi di Trento “very good”  M. Sc. in Physics – Università degli Studi di Trento “110/110 cum laude”
<b>Present appointment</b>	
since 1.9.2000 (with various leaves)  since a.y. 2017-18	Teacher in Mathematics and Physics at Liceo “Carducci”, Bozen-Bolzano  Contract Professor for “Didaktik der unbelebten Natur - Laboratorium” at Faculty of Education, Free University of Bozen-Bolzano
<b>Professional experience</b>	
since 1.9.2003  since 1996  1.1.2014-31.12.2016  21.3-25.3.2011	Affiliated to the Department of Physics, Università degli Studi di Trento  Consultant for museums, schools and institutions in activities of popularization of physics (MuSe Trento, Naturmuseum Bozen, Intendenza scolastica Bolzano, Museo Tridentino di Scienze Naturali, Free University of Bozen-Bolzano, University of Trento...)  Member of the American Physical Society's <i>Committee on Informing the Public</i> , College Park, Maryland, U.S.  Creator, co-organizer and chair of the <i>Focus session on New ways of communicating physics</i> , APS March Meeting, Dallas, Texas, U.S.

<p>2006</p> <p>1.10.2003-30.9.2004</p> <p>18.6.2001-23.8.2003</p> <p>15.7.2000-14.9.2000</p> <p>2.1.1999-1.4.1999</p> <p>since 2006</p>	<p>Official Translator into Italian of the “Force Concept Inventory” and the “Mechanics Baseline Test” (D. Hestenes et al.)</p> <p>Participating Guest, AX Division, Defense and Nuclear Technologies Lawrence Livermore National Laboratory, Livermore, CA, U.S.</p> <p>Post-Doctoral Research Staff Member, Lawrence Livermore National Laboratory, Livermore, CA, U.S.</p> <p>Research Experience for European Students, Department of Physics, Sophia University, Tokyo, JPN</p> <p>Research scholar at Scuola Normale Superiore Classe di Scienze, Pisa, I</p> <p>Peer - reviewer for scientific books and journals:</p> <p><i>Recruiting and Educating Future Physics Teachers: Case Studies and Effective Practices</i></p> <p><i>physica status solidi</i></p> <p><i>Journal of Physics and Chemistry of Solids</i></p> <p><i>Eurasia Journal of Mathematics, Science and Technology Education</i></p> <p><i>The Physics Teacher</i></p> <p><i>Rosmini Studies</i></p> <p><i>Fillide</i></p>
<p><b>Experience in academic teaching</b></p>	
<p>since a.y. 2017-18</p> <p>a.y. 2016-17</p> <p>from a.y. 2009-10 to a.y. 2015-16</p> <p>a.y. 2012-13</p> <p>a.y. 2011-12</p>	<p><b><u>Contract professor:</u></b></p> <p>“Didaktik der unbelebten Natur (Laboratorium)” (<i>in German</i>) Faculty of Education, Free University of Bozen-Bolzano</p> <p>“Storia della Scienza e delle Tecniche” (<i>in Italian</i>) Department of Humanities, Università degli Studi di Trento</p> <p>“Storia della Fisica” (<i>in Italian</i>) Department of Physics, Università degli Studi di Trento</p> <p>“Physics II” (<i>in English</i>) Faculty of Science and Technology, Free University of Bozen-Bolzano</p> <p>“Mathematical Methods for Experimental Science” (<i>in English</i>)</p>

<p>from a.y. 2005-06 to a.y. 2010-11</p> <p>from a.y. 2006-07 to a.y. 2008-09</p> <p>a.y. 2001-2002</p>	<p>Faculty of Computer Science, Free University of Bozen-Bolzano</p> <p>“Mathematical Methods for Physics” (<i>in English</i>) Faculty of Computer Science, Free University of Bozen-Bolzano</p> <p>“Mathematics Support Course” (<i>in English</i>) Faculty of Computer Science, Free University of Bozen-Bolzano</p> <p>“Physics II B” (<i>in English</i>) Las Positas College, Livermore, California, U.S.</p>
	<p><b><u>Teaching assistant:</u></b></p>
<p>a.y. 2013-14</p> <p>a.y. 2011-12</p> <p>from a.y. 2003-04 to a.y. 2005-06</p> <p>a.y. 2003-04</p>	<p>“Physics II” (<i>in English</i>) Faculty of Science and Technology, Free University of Bozen-Bolzano</p> <p>“Physics” (<i>in Italian</i>) Faculty of Science and Technology, Free University of Bozen-Bolzano</p> <p>“Mathematics for Economists” (<i>in English</i>) Faculty of Economics, Free University of Bozen-Bolzano</p> <p>“Introduction to Physics” (<i>in English</i>) Faculty of Computer Science, Free University of Bozen-Bolzano</p>
<b>Memberships</b>	
<p>from 2016</p> <p>from 2016</p> <p>from 2014</p> <p>from 2003 to 2009</p> <p>from 2001</p> <p>from 1998 to 2001</p> <p>from 1999</p>	<p>Member of the <i>European Physical Society</i></p> <p>Member of the <i>Group International de Recherche sur l'Enseignement de la Physique</i></p> <p>Member of the <i>Associazione per l'Insegnamento della Fisica</i></p> <p>Member of the <i>Istituto Nazionale di Fisica Nucleare</i></p> <p>Member of the <i>American Physical Society</i></p> <p>Member of the <i>Istituto Nazionale di Fisica della Materia</i></p> <p>Member of the <i>Società Italiana di Logica e Filosofia della Scienza</i></p>
<b>Research and scholarships</b>	
<p>Theoretical condensed matter physics</p>	<p>Study of the energy states of electronic systems in various arrangements and dimensionalities, especially quantum dots; development of calculation techniques such as Density Functional and Quantum Monte</p>

<p>Philosophy and didactics of physics</p> <p>Scholarships:</p> <p>11.1997-10.2000</p> <p>11.2000-2.2001</p> <p>7.2000-9.2000</p> <p>2.1999-4.1999</p> <p>1996</p> <p>Awards:</p> <p>1999</p>	<p>Carlo; the sign problem in Fermion Monte Carlo. Papers published in <i>Physical Review</i>, <i>Journal of Low Temperature Physics</i>; <i>physica status solidi</i>, <i>European Physical Journal</i> and others.</p> <p>Studies for the popularization of the scientific method in the middle and high schools; intersections between art and physics; conceptual metaphors and physics; the interpretation of quantum mechanics and the phenomenological school of philosophy; kinematics and kinesthetic learning in the primary school. Papers published in <i>Epistemologia</i>, <i>Fillide</i>, <i>School Science Review</i>, <i>Physics Education</i>, <i>Physics World</i> and others.</p> <p>Grant by the Italian Ministry of Instruction, University and Research</p> <p>Grant by Department of Physics, Università degli Studi di Trento</p> <p>Grant by JISTEC and ITC</p> <p>Grant by INFN</p> <p>Grant by IBM</p> <p>First prize at the National Award for under-35 researchers by “Le Scienze”, Italian editor of “Scientific American”</p>
<p><b>Publications</b></p>	
	<p><b><u>Books and book chapters</u></b></p> <p>L.C., <i>Quadri di un'esposizione. Le grandi idee della fisica attraverso 32 capolavori della pittura.</i> Lindau, Torino, p. 272, 2011. ISBN: 9788871809274</p> <p>Korean edition: 레오나르도 콜레티 지음, 명확로 보는 32 가지 물리 이야기 Little Seed Publishing, Seoul, p. 360, 2014. ISBN: 978-89-6423-171-5 (circa 2000 copie vendute)</p> <p>L. C., “Meeting Husserl's Crisis of the European Sciences: developing a richer science and richer humanity from cross-fertilization of physics with literature”</p>

In: *Physics and Literature. Concepts – Transfer – Aestheticization*  
Ed. by Heydenreich, A/Mecke, K.  
De Gruyter Series on the Erlangen Center for Literature and Natural  
Science Studies,  
pp. 203-218, July 2017.  
ISBN: 978-3-11-048111-2

L. C.,  
“Science concepts as semantic-increment generators” in  
*Actas del VIII Congreso de la Sociedad de Logica, Metodologia y  
Filosofia de la Ciencia en España*, pp. 367-368 (2015)  
ISBN: 978-84-606-9303-1

L. C., F. Pederiva, E. Lipparini and C. J. Umrigar  
“Polarizability in Quantum Dots via Correlated Quantum Monte Carlo”  
in: *Recent Progress in Many-Body Theories*  
Series of Advances in Quantum Many-Body Theory, World Scientific,  
Vol.11, pp. 213-216 (2008)  
ISBN: 978-981-277-987-8 DOI: 10.1142/9789812779885\_0028

F. Pederiva, F. Reboledo, D. Bressanini, D. Guclu, L. C., C. J. Umrigar,  
M. H. Kalos  
“The Fixed Hypernode Method for the Solution of the Many Body  
Schrödinger Equation” in  
*Advances in Quantum Monte Carlo*, Chapter 7, 81-92; Editors: J.B.  
Anderson e S: M. Rothstein, Oxford University Press (2007)  
ISBN13: 9780841274167 DOI: 10.1021/bk-2007-0953.ch007

**Articles in refereed journals:**

L. C., *Teaching the nature of science through art: a new art of teaching*  
*Physics Education*, 53 015004 (2018)  
ISSN: 0031-9120

L. C., *L'insegnamento umanistico della fisica*  
*La Fisica nella Scuola*, XLIX, 2 Supplemento pp. 72-75 (2016)  
ISSN: 1120-6527

L. C., *Dualities Worth Knowing in the History of Physics* (invited)  
*AIP History Newsletter*, Vol. 47, No. 2, p. 2 (2015)  
ISSN: 1048-1338

L. C., *Overturing Dilthey's View on Natural Sciences*  
*Epistemologia*, XXXVII (2), pp. 202-216 (2014)  
ISSN: 0392-9760; DOI 10.3280/EPIS2014-002002

L. C., *Dare significato alla fisica*  
*La Fisica nella Scuola*, XLVII, 1, pp. 17-27 (2014)  
ISSN: 1120-6527

L. C., *Il 'lamento di Schrödinger' e il ruolo della soggettività nelle scienze fisiche* (invited)

Atti Acc. Rov. Agiati, a. 261, ser. IX, vol. I, B: pp. 21-41 (2011)  
ISSN: 1123-8038

L. C., *Bridging the two cultures* (invited)

Physics World, **24**, (6), p. 16 (2011)  
ISSN: 0953-8585 <http://dx.doi.org/10.1088/2058-7058/24/06/26>

L. C., *Dalla pila alla radio: una storia stilizzata dell'elettromagnetismo e relativa epistemologia*

Fillide, 2 (2011)  
ISSN: 2281-5007

L. C., *Una breve aneddotica al servizio dell'epistemologia della fisica*

Fillide, 1 (2010)  
ISSN: 2281-5007

L. C., *On dragons and turkeys: physics for future citizens*

School Science Review 91, pp. 337-339 (2010)  
ISSN: 0036-6811

L. C., *Dimenticare il destino e controllare il caso: una svolta nella fisica moderna* (invited)

Pagine Per, VII, Bologna: Assessorato alla Cultura, pp. 43-45 (2010)

L. C., F. Malet, M. Pi, F. Pederiva

*Quantum Monte Carlo study of few-electron concentric double quantum rings*

Physical Review B, **79**, 125315 (2009)  
ISSN: 2469-9969 DOI: <https://doi.org/10.1103/PhysRevB.79.125315>

L. C. et al.

*Mermin habitually answers opinions, real and abstract*

Physics Today, **62**, 9, p. 10 (2009)  
ISSN: 0031-9228 DOI: 10.1063/1.3226701

L. C., F. Pederiva, E. Lipparini, C. J. Umrigar

*Spin- and Charge Density Excitation in Quantum Dots via Quantum Monte Carlo simulation*

Physica Status Solidi B, **244**, pp. 2317-2321 (2007)  
ISSN: 1521-3951 DOI: 10.1002/pssb.200674605

M.H. Kalos, L. C., F. Pederiva

*Fermion Monte Carlo calculations on liquid-<sup>3</sup>He*

Journal of Low Temperature Physics, **38**, 3/4, pp. 747-752 (2005)  
ISSN: 0022-2291 DOI:10.1007/s10909-005-2297-9

L. C.

*Una proposta per l'educazione scientifica in Italia*

Didattica delle Scienze e Informatica nella Scuola, **237**, 58-60 (2005)  
ISSN: 1593-537X

	<p>L. C. <i>Valore e attualità dell' insegnamento della fisica</i> La Fisica nella Scuola, XXXVII, 2, pp. 70-74 (2004) ISSN: 1120-6527</p> <p>L. C., F. Pederiva, E. Lipparini, C.J. Umrigar <i>Investigation of excitation energies and Hund's rule in open shell quantum dots by Diffusion Monte Carlo simulations</i> European Physical Journal B, 27, 385 (2002) ISSN: 1434-6036</p> <p>M. Barranco, L. C., A. Emperador, E. Lipparini, M. Pi, Ll. Serra <i>Wave-vector dependence of spin and density multipole excitations in quantum dots</i> Physical Review B, 61, 8289 (2000) ISSN: 2469-9950</p> <p>N. Barraza, L. C., M.P. Tosi <i>Vacancies in quantal Wigner crystals near melting</i> Solid State Communications, 112, 261 (1999) ISSN: 0038-1098</p> <p>L. C. <i>Atomi Artificiali</i> Le Scienze, 374, 78 (1999) Published also in "Nuovi Materiali", Le Scienze Quaderni, 115 (2000) and in "Nanotecnologie", Le Scienze Dossier, 10 (2002) ISSN: 0036-8083</p> <p>E. Lipparini, L. C., G. Orlandini, Ll. Serra. <i>Collective spin states in the electron gas in different dimensions and geometries</i> Czechoslovak Journal of Physics, 48, 5 (1998) ISSN: 0011-4626</p>
<b>Presentations</b>	
	<p><i>Raccontare la fisica con le immagini</i> (invited seminar) Dipartimento di Scienze della Formazione, Università Roma III (8.11.2017)</p> <p><i>Exploiting physics concepts on the cultural level: how to making more of physics. A proposal for the CIP.</i> CIP Meeting, APS, Washington DC (videoconferenza) (15.9.2016)</p> <p><i>Exploiting physics concepts on the cultural level: how to making more of physics.</i> (selected oral contribution) 2<sup>nd</sup> International Conference on the History of Physics</p>

Ecophysics, Pöllau (Austria) (5-7.9.2016)

*Making physics humanistic. A conceptual-laboratory proposal.*  
(selected oral contribution)

GIREP 2016

Institute of Physics, Jagellonian University, Krakow (30.8-3.9.2016)  
(participation declined for lack of funds)

*L'insegnamento umanistico della fisica*

(selected oral contribution)

54° Congresso Nazionale dell'Associazione per l'Insegnamento della Fisica,  
MuSe, Trento (21-24.10.2015)

*Science concepts as semantic-increment generators*

(selected oral contribution)

VIII Congress of the Spanish Society for Logic, Methodology and Philosophy of Science,  
Facultat de Filosofia, Universitat de Barcelona, Barcellona (7-10.7.2015)

*Dualities Worth Knowing in the History of Physics*

(invited seminar)

Center for the History of Physics, American Institute of Physics, College Park, Maryland (2015)

*Il dibattito storico ed epistemologico sulla fisica dei quanti*

(invited seminar)

Liceo "G. Prati", Trento (2015)

*Meeting Husserl's Crisis of the European Sciences: developing a richer science – and richer humanity - from cross-fertilization of physics with literature*

(selected oral contribution)

Inaugural Conference of ELINAS: Erlangen Center for Literature and Natural Sciences

Friedrich-Alexander Universität Erlangen-Nürnberg (2014)

*Slow Science* (con C. Bonomi e O. Jousson)

(invited)

MuSe Fuori Orario, Museo delle Scienze, Trento (2014)

*Galileo, il suo mondo e altri scienziati suoi contemporanei*

(invited)

Museo Tridentino di Scienze Naturali, Trento (20.2.2013)

*Pennellate di fisica. Ricercare per immagini - ricercare per formule*

(invited)

Facoltà di Lettere e Filosofia, Trento (16.10.2012)

*Un incontro tra le due culture: i concetti della fisica e i capolavori della pittura*

(invited)



Museo Civico di Rovereto, Rovereto (TN) (17.11.2011)

*Back to the old questions: physics as culture*

(selected oral contribution)

American Physical Society March Meeting '11,

Focus Session on “New ways of communicating physics”

Dallas, TX, USA (21-25.3.2011)

*Quantum Monte Carlo study of few-electron concentric double quantum rings*

(selected oral contribution)

American Physical Society March Meeting 2009, Pittsburgh (PA, USA)

(16-20.3.2009)

*Quantum Monte Carlo for Electronic Nanostructures: some results*

(invited seminar)

Departament de Estructura i Constituents de la Materia

Universitat de Barcelona, Barcellona (SPA) (2008)

*Polarizability in Quantum Dots via Correlated Quantum Monte Carlo*

(selected oral contribution)

RPMBT14 Recent Progress in Many-Body Theory 14

Technical University of Catalonia, Barcellona (SPA) (16-20.7.2007)

*Quantum Monte Carlo in a philosophical perspective*

(invited seminar)

Malvin Kalos: 40 Years of Green's Function Monte Carlo

Courant Institute of Mathematical Sciences, New York University,

New York (NY, USA) (11-12.5.2007)

*Linear Response in Quantum Dots with the Diffusion Monte Carlo approach*

(invited seminar)

Dipartimento di Fisica, Università di Trento, Trento-Povo (2007)

*Linear Response and Collective Excitations in Quantum Dots: a Quantum Monte Carlo Study*

(selected oral contribution)

XXX International Conference of Theoretical Physics

Ustron, Polonia (2006)

*Order from disorder: how to get accurate answers from randomness*

(selected oral contribution)

4th International Summer School - Philosophy, Probability and Physics

University of Konstanz (Germany) (7-13.8.2005)

*Fermion Monte Carlo calculations for liquid Helium-3*

(invited seminar)

Institut für Experimentalphysik der Universität Wien, Vienna, Austria

(30.1.2004)

*Fermion Monte Carlo calculations on large systems*

	<p>(selected oral contribution)  American Physical Society March Meeting 2003  Austin, Texas, USA (3-7.3.2003)</p> <p><i>Supercomputer e metodi Monte Carlo in alcuni casi di studio</i>  (invited contribution)  CAPI2002 – Workshop sul Calcolo ad Alte Prestazioni  Politecnico di Milano, Milano (2002)</p> <p><i>Towards Fermion Monte Carlo</i>  (selected poster)  Bay Area Scientific Computing Day  Sandia National Laboratories, Livermore (CA, USA) (2002)</p> <p><i>A computational physicist's view of Popper's conjectures and refutations</i>  (selected oral contribution)  Karl Popper Centenary Congress  Rathaus &amp; Universität Wien, Vienna, Austria (3-7.7.2002)</p> <p><i>Wave-vector dependence of spin- and charge density multipole modes in quantum dots</i>  (selected poster)  Mesospin Euroconference  Cortona, I (28.6-2.7.2000)</p> <p><i>Testing Hund's rule in quantum dots with Diffusion Monte Carlo: a preview</i>  (selected poster)  Electronic Structure 2000,  Georgia Institute of Technology, Atlanta (GA, USA) (19-22.5.2000)</p> <p><i>Vacancies in quantal Wigner crystals in different dimensions</i>  (invited poster)  Congresso Nazionale INFMeeting 1999  Le Ciminiere, Catania (14-18.6.1999)</p> <p><i>Wave-vector dependent response in large quantum dots</i>  (selected poster)  Congresso Nazionale INFMeeting 1999  Le Ciminiere, Catania (14-18.6.1999)</p> <p><i>Funny slopes for Electrons</i>  (selected poster)  Congresso Nazionale INFMeeting 1999  Le Ciminiere, Catania (14-18.6.1999)</p>
<b>Language competence</b>	
	<p>Italian (mothertongue, C2)</p> <p>German (Patentino A di Bilinguismo della Provincia di Bolzano, C1 -</p>

2004)

English (University of Cambridge ESOL Examination: Certificate in Advanced English, C1 – 2010)

Bolzano-Bozen, September 22<sup>nd</sup> , 2018

Leonardo Colletti

A handwritten signature in black ink, appearing to read 'Leonardo Colletti', written in a cursive style.