

Ciro Minichini
born in Naples, Italy
on 23rd April 1975

PhD in Fundamental and Applied Physics, at University of Naples Federico II.
Thesis title: *A mutation-selection model for oligonucleotides*, tutor prof. A. Sciarrino.

MSc in Physics, at University of Naples Federico II.
Thesis title: *Studio di un modello dinamico di un mercato finanziario* (Study of a dynamic model of a trade market), tutors prof. A. Coniglio (Univ. Napoli) and prof. R. N. Mantegna (Univ. Palermo).

Current position

Researcher at INDIRE – National Institute for Educational Documentation, Innovation and Research.

Research activity

At University of Naples Federico II

Research associate on the topic *Models for the training of adults in the field of science and mathematics*. (nov 2013 – oct 2014).

Research associate on the topic *Sperimentation and evaluation of learning progressions concerning the relationship between art and science*. This activity has been developed in the framework of the EU-FP7 project *ISWA – Immersion in the Science Worlds through the Arts*. (dic 2012 – apr 2013).

Research associate on the topic *Models for the design and the development of learning progressions and for the teacher training in the field of science education*. This activity has been developed in the framework of the EU-FP7 project *TRACES – Transformative Research Activities. Cultural diversities and Education in Science*. (aug 2011 – aug 2012).

Research associate on the topic *Development of learning progression in Physics for schools, universities and science centres*. This activity has been developed in the framework of the PRIN 2004 project *F21 – Design of the curriculum and of learning progressions for the physics education. Modeling, experimentation and use of new technologies. Relationship between formal and informal contexts* (aug 2005 – oct 2006).

Research associate in the framework of the PRIN 2001 project *SECIF – Design, experimentation and evaluation of learning progressions in physics, for the primary and the secondary school* (2001).

At INFN – National Institute for Nuclear Physics

Research associate in the framework of the project *FI42 – Quantum groups and algebraic structures in the field theory*, with a special attention to the applications of the theory of algebras representation to issues concerning mutation and selection of biomolecules (2002 – 2004).

Teaching at University

At University Suor Orsola Benincasa, Naples

Professor for the Course *Didactics of Mathematics* (2013/14, 2014/15 2015/16).

Assistant Professor for the Course *Didactics of Mathematics* (2008/09, 2009/10, 2010/11, 2011/12).

At University of Naples Federico II

Professor for the Course *Tools for the didactics of the astronomy* in the framework of the School for the teachers' preparation. (2008/09).

Professor for the Course of *Earth and Universe* in the framework of the Master in Science Education (2007/08).

Professor for the Course *Laboratory of didactics of the physics 2* in the framework of the School for the teachers' preparation. (2006/07).

At Second University of Naples

Lecturer for the Course of *Physics*, at the Faculty of Engineering. (2004/05, 2005/06).

Lecturer for the Course of *Mathematics and Physics*, at the Faculty of Engineering. (2004/05, 2005/06).

Teacher Training

At several schools (Circoli didattici di Napoli: 5°, 38°, 48°, 70°, 73°; Circoli comunali di Napoli: 15°, 16°, 24°; SMS "G. Siani", Villaricca (NA); 1° Circolo Didattico, S. Giorgio a Cremano (NA); 5° Circolo Didattico, Benevento; Convitto Nazionale "P. Giannone", Benevento; I.C. di Cautano (BN); Istituto Comprensivo "E. de Filippo", Morcone (BN))

Design and developing of training activities addressed to teachers employed in kindergarten, primari and secondary school, for globally about 500 hours. (2006/07, 2007/08, 2008/09, 2009/10, 2010/11, 2012/13, 2013/14).

Other activities

At schools IC "M. Buonarroti" and IC "Peppino Impastato", Palermo

Evaluation of the activities of dissemination of science, developed by the association *Palermoscienza*. (apr – giu 2011; feb – giu 2012)

At several schools (Napoli: Circoli Didattici di Napoli: 5°, 38°, 73°; 15° Circolo comunale di Napoli; IC 6° "Fava-Gioia", Napoli; ISS Liceo Elsa Morante, Napoli; LSS "F. Sbordone", Napoli)

Design and development of learning activities in the field of mathematics and science education, addressed to pupils in kindergarten, primari and secondary school. (2007/08, 2008/09, 2009/10, 2010/11, 2011/12, 2012/13, 2013/14, 2014/15)

For the Association Compare

Coordination of educational area of the Centre Mammut, operating in northern area of Naples. The centre is involved in informal educational activities addressed to children, teenagers and adults (<http://www.mammutnapoli.org/>). (aug 2007- feb 2008).

For the ISS national Plan (Teaching Experimental Sciences), promoted by the Italian Ministry of Education

Discussant in workshops on the topics *Light, color and vision* and *Earth and Universe*. (nov – dic 2007).

Documentation and evaluation of the activities developed at the local nodes of the ISS Plan in southern Italy (apr – sep 2008).

At University of Naples Federico II

Tutoring of students and teachers in the framework of the national project *Lauree Scientifiche*, on the topic *Mathematics and modelling*. (nov 2007 – feb 2008).

Tutoring of students in Physics (a. a. 2002/03).

At IPIA "A. Casanova", Napoli. In collaboration with Maestri di Strada onlus

Professor for the Course *Physics*, in the framework of the *Pilot Project OFIS* (secondary school). (2004/05, 2005/06).

At Fondazione IDIS - Città della Scienza (science centre)

Collaboration in the project *LES – Laboratories for Science Education*. Design and developing of learning activities on the topics *Forces, deformations and movement*, *Light, color and vision* and *The physical properties of water*, addressed to pupils of kindergarten, primary and secondary school. (2001/2002 e 2002/03).

Other

Qualification for teaching Mathematics and Physics at upper secondary school

Publications

Reviews and Proceedings

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2014). Ricerca, pratica e politiche educative in ambito scientifico: alcuni risultati dal progetto TRACES. *Giornale di Fisica*, 55, 229-240.

doi: 10.1393/gdf/i2014-10200-y

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2014). Communities of practice and continuous teacher professional development. Findings from eight case studies. In C. P. Constantinou, N. Papadouris & A. Hadjigeorgiou (Eds.), *E-Book Proceedings of the ESERA 2013 Conference: Science Education Research For Evidence-based Teaching and Coherence in Learning*. Part 14 (co-ed. D. Couso, & L. Louca), pp.85-94. Nicosia, Cyprus: European Science Education Research Association.

Disponibile da http://www.esera.org/media/eBook_2013/Strand%2014/ESERA_ebook_part_14.pdf

Guidoni, P., Mellone, M., & Minichini, C. (2013). Narrative context and paradigmatic tools: a tale for counting. In B. Ubuz, Ç. Haser, & M. A. Mariotti (eds.), *Proceedings of the Eighth Congress of the European Society for Research in Mathematics Education*, pp. 2098-2107. Ankara, Turkey: Middle East Technical University.

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2012). Science teachers, policies and education research. Analysis of surveys conducted in six countries. In C. Bruguière, A. Tiberghien, & P. Clément (Eds.), *E-Book Proceedings of the ESERA 2011 Conference: Science learning and Citizenship*. Part 13 (co-ed. J. Viiri and D. Couso), pp. 6-13. Lyon, France: European Science Education Research Association.

Disponibile da http://www.esera.org/media/ebook/ebook-esera2011____Strand13.pdf

Mautone, O., Mellone, M., Minichini, C., & Pennino M. (2012). Bisogna salvare Temujin. *Cooperazione Educativa*, 61, 54-58.

Guidoni, P., Mellone, M., Minichini, C., & Serpico, M. (2011). Towards a "resonance" comprehension of the polynomial representation of numbers. In J. Novotná, & H. Moraová (eds.), *SEMT 11 - International Symposium, Elementary Maths Teaching. Proceedings*, pp. 142-149. Prague, Czech Republic: Charles University, Faculty of Education.

Balzano, E., Carlone, R., Minichini, C. (2006). Costruzione di concetti e competenze matematiche nella modellizzazione di fenomeni fisici con l'uso di sistemi informatici. Esempi di proposte per la formazione degli insegnanti. In O. Robutti, & M. Mosca (cur.), *Atti del II Convegno Nazionale "La matematica e la fisica nella scuola e nella formazione degli insegnanti"*. Milano: Ghisetti e Corvi Editori

Minichini, C., & Sciarrino, A. (2006). Mutation model for nucleotide sequences based on crystal basis, *Biosystems* 84(3): 191.

Frappat, L., Minichini, C., Sciarrino, A., & Sorba, P. (2003). Universality and Shannon entropy of codon usage. *Physical Review E* 68: 061910.

Abstract

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2015, agosto). *Teachers' perceptions of isolation and educational policies. Insights from a four year empirical study*. Contributo accettato alla 11th biannual Conference of the European Science Education Research Association (ESERA), Helsinki, Finland.

Serpico, M., Balzano, E., Cuomo F., & Minichini C. (2015, aprile). *Interaction among peers: a valuable resource for science teachers*. Contributo presentato allo IOSTE Eurasia Regional Symposium, Istanbul, Turkey.

Disponibile da http://www.ioste2015.org/wp-content/uploads/2014/11/IOSTE-Programme-Abstract-Book_v7.pdf

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2015, aprile). *Bridging the gap between research and practice in science education. A participatory model for teacher-researcher collaborations*. Contributo presentato allo IOSTE Eurasia Regional Symposium, Istanbul, Turkey.

Disponibile da http://www.ioste2015.org/wp-content/uploads/2014/11/IOSTE-Programme-Abstract-Book_v7.pdf

Guidoni, P., Mellone, M., & Minichini, C. (2014, agosto). *Resonantly guided conceptual change along the construction of "number sense" in first grade*. Contributo presentato alla 9th International Conference on Conceptual Change, Bologna, Italy.

Disponibile da <https://www.aub.edu.lb/fas/smec/Documents/SMEC/9ICC%20Final%20Program%20-%20July%202022.pdf>

Mellone, M., Guidoni, P., Minichini, C., Esposito, M., & Siringano, F. M. (2014, agosto). *Conceptual change in 'linear' thinking: experiencing elastic deformations in third grade*. Contributo presentato alla 9th International Conference on Conceptual Change, Bologna, Italy.

Disponibile da <https://www.aub.edu.lb/fas/smec/Documents/SMEC/9ICC%20Final%20Program%20-%20July%202022.pdf>

Balzano, E., Minichini, C., De Vizia, M. D., Guidoni, P. (2007, novembre). *The ISS National Plan. Action research activities and strategies for professional development for teachers of science*. Contributo presentato alla ICPE 2007– International Conference on Physics Education, Marrakech, Morocco.

Balzano, E., Gagliardi, M., Giordano, E., Guidoni, P., Levrini, O., Mendella, G., Minichini, C., Tarsitani, C. (2007, novembre). *The physics' curriculum research choices and results*. Contributo presentato alla ICPE 2007– International Conference on Physics Education, Marrakech, Morocco.

Books

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2012). *Research and practice in science education in Italy: a survey study*. Salerno: CUES.

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2012). *Research and practice in science education in Italy: 8 case studies*. Salerno: CUES.

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2012). *Research and practice in science education: a cross comparison of national surveys*. Salerno: CUES.

Balzano, E., Cuomo, F., Minichini, C., & Serpico, M. (2012). *Findings and recommendations for research-based practice in science education*. Salerno: CUES.

Minichini, C. (2011). Come pensano i bambini, come pensa la scienza. Un laboratorio sull'ombra. In G. Zoppoli (cur.), *Come partorire un mammut. Antologia di pratiche, modi, strumenti, visioni e intuizioni dell'intervento pedagogico*. Napoli: Marotta&Cafiero editori.

Balzano, E., Gagliardi, M., Giordano, E., Guidoni, P., Minichini, C., & Tarsitani, C. (2008). Lo studio delle onde dalla scuola dell'infanzia al termine della scuola secondaria superiore. In P. Guidoni, & O. Levrini (cur.), *Approcci e proposte per l'insegnamento-apprendimento della fisica a livello preuniversitario*. Udine : Forum.

Balzano, E., Guidoni, P., & Minichini, C. (2008). I modi del pensare: comune, fenomenologico, per modelli... In P. Guidoni, & O. Levrini (cur.), *Approcci e proposte per l'insegnamento-apprendimento della fisica a livello preuniversitario*. Udine : Forum.

Balzano, E., Guidoni, P., & Minichini, C. (2008). Educazione formale e informale: un'occhiata ai problemi. In P. Guidoni, & O. Levrini (cur.), *Approcci e proposte per l'insegnamento-apprendimento della fisica a livello preuniversitario*. Udine : Forum.

Minichini, C. (2005). Buone pratiche e cattive abitudini. In M. Braucci , & G. Zoppoli (cur.), *Napoli Comincia a Scampia*. Napoli: l'Ancora del Mediterraneo.