

CURRICULUM VITAE

1. Personal Data.

- **Name:** Nicola BELLOMO
- **Professor of Applied Mathematics and Mathematical Physics**
- **Contact information:** Politecnico di Torino
Department of Mathematical Sciences
Corso Duca degli Abruzzi, 24
10129 Torino
Italy.
- **Telephone number:** +39-090-7514
- **FAX:** +39-090-7599
- **E-mail:** nicola.bellomo@polito.it

2. International Research Projects.

- TEMPUS: ERB CIPACT 92/2245 (1992).
- TEMPUS: ERB CIPACT 93/2373 (1993).
- TMR: ERB4001GT 96/5276 (1996).
- HUMAN POTENTIAL AND MOBILITY: HPRN - CT - 2000 - 00105.
- STRUCTURING THE EUROPEAN RESEARCH AREA: FP6 - 2002 - MOBILITY - 1, No 503661. *Using mathematical modelling and computer simulation to improve cancer therapy.*
- STRUCTURING THE EUROPEAN RESEARCH AREA: FP6 - 2004 - MOBILITY - 5, No 500923. *Modeling, mathematical methods and computer simulation of tumor growth and therapy.*
- HEALTH - COLLABORATIVE LARGE-SCALE PROJECT: FP7, No 202047. *Resolve Chronic Inflammation and achieve healthy ageing by understanding non-regenerative repair. Coordinator of Work Package 4 - Modeling and Statistical Analysis.*
- ERASMUS MUNDUS ACTION 2 (EMA2) - Eurotango Project: D. Knopoff's mobility from Cordoba University (Argentina) to Politecnico di Torino (Italy), 7 months (2012). Eurotango II Project: J. Agnelli's mobility from Cordoba University (Argentina) to Politecnico di Torino (Italy), 6 months (2013-2014).
- eVACUATE *A holistic, scenario-independent, situation-awareness and guidance system for sustaining the Active Evacuation Route for large crowds* Collaborative project, Project number 313161, (2013).

3. Boards.

- Member of the Academic Senate of the Politecnico di Torino: Coordinator of the Scientific Research Board (1992-2001).
- Member of the Scientific Board of the Gruppo Nazionale Fisica Matematica (G.N.F.M.) of the Istituto Nazionale di Alta Matematica (I.N.D.A.M.) (1996-2003).
- Member of the Scientific Board of the Istituto Nazionale di Alta Matematica (I.N.D.A.M.) (from 2003 to 2006).
- President of the Italian Society of Industrial and Applied Mathematics (S.I.M.A.I.) (from 2009).
- Board of Trustees of the European Mathematical Society (from 2011).

4. Direction of Journal and Book Series.

4.1. Editor in Chief of Journals.

- *Mathematical Models and Methods in Applied Sciences* (from 1991, with Franco Brezzi).
- *Surveys in Mathematical Sciences* (from 2013, with Simon Salamon)

4.2. Editor in Chief of Book Series.

- *Birkhauser series: Modelling and simulation in engineering and technology.*
- *World scientific series: Advances in mathematics for applied sciences.*

5. Selected Papers (2003-2013).

- N. BELLOMO, E. DE ANGELIS, and L. PREZIOSI, Multiscale modelling and mathematical problems related to tumor evolution and medical therapy, *Journal of Theoretical Medicine*, 5, (2003), 111–136.
- N. BELLOMO and A. BELLOUQUID, From a class of kinetic models to the macroscopic equations for multicellular systems in biology, *Discrete and Continuous Dynamical Systems B*, 4, (2004), 59-80.
- N. BELLOMO, A. BELLOUQUID, and M. DELITALA, Mathematical topics on the modelling complex multicellular systems and tumor immune cells competition, *Math. Models Methods Appl. Sci.*, 14, (2004), 1683-1733.
- N. BELLOMO and A. BELLOUQUID, On the onset of non-linearity for diffusion models of biological materials by asymptotic analysis, *Int. J. Nonlinear Mechanics*, 41, (2006), 281-293.
- N. BELLOMO, A. BELLOUQUID, J. NIETO, and J. SOLER. Multicellular biological growing systems: hyperbolic limits towards macroscopic description. *Math. Models Methods Appl. Sci.*, 17, (2007), 1675-1693.

- N. BELLOMO, S. DE LILLO, and M.C. SALVATORI, Mathematical tools of the kinetic theory of active particles with some reasoning on the modelling progression and heterogeneity. *Math. Comput. Modelling*, 45, (2007), 564-578.
- N. BELLOMO and G. FORNI, Complex multicellular systems and immune competition: New paradigms looking for a mathematical theory, *Current Topics In Developmental Biology*, 81, (2008), 485-502.
- N. BELLOMO, N. Kaleta LI, and P.K. MAINI, On the foundations of cancer modelling: selected topics, speculations, and perspectives, *Math. Models Methods Appl. Sci.*, 18, (2008), 593-646.
- G. AJMONE MARSAN, N. BELLOMO, and M. EGIDI, Towards a mathematical theory of complex socio-economical systems by functional subsystems representation, *Kinetic And Related Models*, 1, (2008), 249-278.
- N. BELLOMO and DOGBE' C, On the modelling crowd dynamics from scaling to hyperbolic macroscopic models, *Math. Models Methods Appl. Sci.*, 18, (2008), 1317-1345.
- N. BELLOMO and M. DELITALA, From the mathematical kinetic, and stochastic game theory to modelling mutations, onset, progression and immune competition of cancer cells, *Physics of Life Reviews*, 5, (2008), 183-206.
- N. BELLOMO and A. BELLOUQUID, On the derivation of macroscopic tissue equations from hybrid models of the kinetic theory of multicellular growing systems - The effect of global equilibrium, *Nonlinear Anal. Hybrid Syst.*, 3, (2009), 215-224.
- N. BELLOMO, Modeling the hiding-learning dynamics in large living systems , *Appl. Math. Lett.*, 23, (2010), 907-911.
- N. BELLOMO, A. BELLOUQUID, and E. DE ANGELIS. On the derivation of biological tissue models from kinetic models of multicellular growing systems, in B. Albers, Ed., *Continuous Media with Microstructure* , p. 131-145, Springer Berlin Heidelberg, 2010.
- N. BELLOMO, A. BELLOUQUID, J. NIETO and J. SOLER, Multiscale biological tissue models and flux-limited chemotaxis for multicellular growing systems, *Math. Models Methods Appl. Sci.*, 20, (2010), 1179-1207.
- N. BELLOMO, H. BERESTYCKI, F. BREZZI, and J.-P. NADAL, Mathematics and complexity in life and human sciences, *Math. Models Methods Appl. Sci.*, 20, (2010), 1391-1395.
- N. BELLOMO and B. CARONARO, Toward a Mathematical Theory of Living Systems focusing on Developmental Biology and Evolution: A Review and Perspectives, *Phys. Life Rev.*, 8(1), (2011), 1-18.
- N. BELLOMO and C. DOGBE', On the modeling of traffic and crowds: A survey of models, speculations, and perspectives, *SIAM Rev.*, 53(3), (2011), 409-463.
- N. BELLOMO and A. BELLOUQUID, On the modeling of crowd dynamics: Looking at the beautiful shapes of swarms, *Netw. Heterog. Media*, 6(3), (2011), 383-399.
- V. COSCIA, L. FERMO, and N. BELLOMO, On the mathematical theory of living systems II: The interplay between mathematics and system biology, *Comput. Math. Appl.*, 62(10), (2011), 3902-3911.

- L. ARLOTTI, E. DE ANGELIS, L. FERMO, M. LACHOWICZ, and N. BELLOMO, On a class of integro-differential equations modeling complex systems with nonlinear interactions, *Appl. Math. Lett.*, 25(3), (2012), 490-495.
- N. BELLOMO and A. BELLOUQUID, Global solution to the Cauchy problem for discrete velocity models of vehicular traffic, *J. Diff. Equations*, 252, (2012), 1350-1368.
- N. BELLOMO, B. PICCOLI, and A. TOSIN, Modeling crowd dynamics from a complex system viewpoint, *Math. Models Methods Appl. Sci.*, 22 (Supp. 2), (2012), 1230004 (29 pages).
- N. BELLOMO and J. SOLER, On the mathematical theory of the dynamics of swarms viewed as complex systems, *Math. Models Methods Appl. Sci.*, 22 (Supp. 1), (2012), 1140006 (29 pages).
- N. BELLOMO, M. HERRERO, and A. TOSIN, On the dynamics of social conflicts: looking for the black swan, *Kinetic And Related Models*, 6, (2013), 459-479.
- A. CARLONI, V. POLETTI, L. FERMO, N. BELLOMO, and M. CHILOSI, Heterogeneous distribution of mechanical stress in human lung: A mathematical approach to evaluate abnormal remodeling of IPF, *Journal of Theoretical Biology*, 323, (2013), 136-140.
- N. BELLOMO, A. BELLOUQUID, J. NIETO, and J. SOLER, Modeling chemotaxis from L^2 -closure moments in kinetic theory of active particles, *Discrete and Continuous Dynamical Systems Series B*, 18, (2013), 847-863.

6. Books.

6.1. Books (Author)

- **Nonlinear Stochastic Systems in Mechanics**, World Scientific 1987 (with R. Riganti).
- **Mathematical Topics Nonlinear Kinetic Theory**, World Scientific 1988 (with A. Palczewsky and G. Toscani).
- **Mathematical Topics in Nonlinear Kinetic Theory II: the Enskog Equation**, World Scientific 1991 (with M. Lachowicz, J. Polewczak and G. Toscani).
- **Modelling Mathematical Methods and Scientific Computation**, CRC Press 1995, (with L. Preziosi).
- **Mechanics and Dynamical Systems with Mathematica**, Birkhauser 2000, (with L. Preziosi and A. Romano).
- **Lecture Notes on the Mathematical Theory of Generalized Boltzmann Models**, World Scientific 2000, (with M. Lo Schiavo).
- **Generalized Kinetic Models in Applied Sciences**, World Scientific 2003, (with L. Arlotti, E. De Angelis, and M. Lachowicz).
- **Generalized Collocation Methods - Solution to Nonlinear Problems**, Birkhauser-Springer, Boston, 2007, (with B. Lods, R. Revelli, and L. Ridolfi).

- **Modeling Complex Living Systems - Kinetic Theory and Stochastic Game Approach**, Birkhauser-Springer, Boston, 2008.
- **Complex Systems and Society: Modeling and Simulation**, Springer, New York, 2013, (with G. Ajmone Marsan, and A. Tosin),

6.2. Books (Editor)

- **Nonlinear Stochastic Mechanics**, Springer 1992 (with F. Casciati).
- **Lecture Notes on the Mathematical Theory of the Boltzmann Equation**, World Scientific 1995.
- **A Survey of Models for Tumor Immune System Dynamics**, Birkhauser-Springer (Boston 1996 (with J. Adam).
- **Modelling in Applied Sciences: A Kinetic Theory Approach**, Birkhauser-Springer (Boston 2000 (with M. Pulvirenti).
- **Lecture Notes on the Discretization of the Boltzmann Equation**, World Scientific 2003 (with R. Gatignol).
- **Selected Topics on Cancer Modelling Genesis - Evolution - Immune Competition - Therapy**, Birkhauser-Springer (Boston), 2008 (with M. Chaplain and E. De Angelis).