

Luca Ghezzi – Curriculum Vitæ

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Personal data

Born: September 21, 1974 – Gallarate, VA, Italy

Sex: male – Nationality: Italian – Marital status: single

Military service: equivalent civil service, from June 1999 to April 2000

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Professional experience

1. March 2001 – Present, ABB Group

www.abb.com

Employed as researcher by ABB Corporate Research Center (Sesto S. Giovanni, MI, Italy) and from July 2002 by ABB Sace S.p.A. (Vittuone, MI, Italy). I have carried out R&D activities for italian and european business units of ABB (one of the world's leading engineering companies). My role is in numerical modeling of physical problems (mainly mechanics, electromagnetics, fluid dynamics & heat transfer and magnetohydrodynamics) and in simulation of logistic and industrial processes. This implies developing original algorithms and interfacing commercial codes, as well as supporting technical people with computations. From the year 2008 I have assumed the responsibility of the unit devoted to mathematical modeling and numerical simulations (me and 5 people).

2. May 2000 – February 2001, Saipem S.p.A. (ENI Group)

www.saipem.eni.it

Employed as structure engineer by the company (S. Donato Milanese, MI, Italy), active in off-shore constructions and undersea pipeline laying. I have carried out R&D activities, viz. numerical modeling of non-linear mechanical problems (contacts, plasticity, large displacements) and thermal problems (analytical and numerical models, with experimental validation of welded joints). From November 2000 to February 2001 I have worked for Saibos (Montigny le Bretonneux, France), a Saipem and Bouygues Off Shore participated company, in the framework of a deep sea oil extraction project (Kizomba project, off-shore Angola).

Education

2010

Ph.D.: Modeling and Simulation of Low Voltage Arcs

Techische Universiteit Delft, the Netherlands

(Delft University of Technology)

Promotor: Prof.ir. Lou van der Sluis. An experimental, theoretical and numerical research on the electric arc plasma found in low voltage circuit breakers.

2007

Degree (laurea magistrale) in Mathematics

University of Milan, Italy (Università degli Studi di Milano)

Final degree mark: 110/110 *cum laude*

Advisor: Prof. Elena Zampieri. Thesis on the Spectral Element Method for the numerical approximation of partial differential equations.

- 1993 – 1998 **Degree (laurea magistrale) in Structural Engineering**
 Technical University of Milan, Italy (Politecnico di Milano)
 Final degree mark: 100/100 *cum laude*
Advisor: Prof. Giulio Maier. Thesis on shakedown phenomena (theory and computational methods by mathematical programming), an optimization approach to computational elastoplasticity.
- 1988 – 1993 **High school Diploma (science oriented Lyceum)**
 Liceo Scientifico Statale di Gallarate, Italy
 Final diploma mark: 60/60 *cum laude*

Languages

Fluent English, both spoken and written. Italian as native language.

Publications on refereed journals

1. L. Ghezzi, L.F. Pavarino, E. Zampieri, Overlapping Schwarz preconditioners for spectral element methods in nonstandard domains and heterogeneous media, *Journal of Computational and Applied Mathematics*, 234:1492-1504, 2010.
2. A. Balestrero, L. Ghezzi, M. Popov, G. Tribulato, and L. van der Sluis, Black box modeling of low voltage circuit breakers, *IEEE Trans. on Power Delivery*, 25(4):2481–2488, 2010.
3. A. Balestrero, L. Ghezzi, M. Popov, and L. van der Sluis, Current interruption in low voltage circuit breakers, *IEEE Trans. on Power Delivery*, 25(1):206–211, 2010.
4. J.W. McBride, A. Balestrero, L. Ghezzi, G. Tribulato, and K.J. Cross, Optical fiber imaging for high speed plasma motion diagnostics: Applied to low voltage circuit breakers, *AIP Rev. Sci. Instr.*, 81(5), 2010.
5. A. Frangi, L. Ghezzi, and P. Faure-Ragani, Accurate force evaluation for industrial magnetostatics applications with fast Bem-Fem approaches, *Computer Modeling in Engineering & Sciences (CMES)*, 15(1):41–48, 2006.
6. A. Frangi, P. Faure-Ragani, and L. Ghezzi, Magneto-mechanical simulations by a coupled fast multipole method-finite element method and multigrid solvers, *Computer & Structures*, 83:718–726, 2005.
7. Bottasso C., Croce A., Ghezzi L., and Faure P., On the solution of inverse dynamics and trajectory optimization problems for multibody systems, *Multibody System Dynamics*, 11:1–22, 2004.

Main training courses

1. *Introduction to Multidisciplinary Optimization Techniques*, by NAFEMS (National Agency for Finite Element Methods and Standards). Fiat Research Center, Orbassano, TO, Italy. March 12–13, 2002.
2. *Computational Fluid Dynamics, Basic Methods, Recent Developments, Applications*. Directed by Prof. A. Quarteroni at MOX (modeling and scientific computing), Dept. of Mathematics, Technical University of Milan, Italy. April 7–11, 2003.

3. *Introduction to **Parallel and Distributed Computing Techniques***, CILEA (supercomputing center of lombard universities), Segrate, MI, Italy. October 12–15, 2004.
4. ***Grid Generation Techniques for Scientific Computing***. Directed by Prof. A. Quarteroni and L. Formaggia at MOX (modeling and scientific computing), Dept. of Mathematics, Technical University of Milan, Italy. November 21–24, 2005.

Computer skills

Operating systems: knowledge as a user of Unix (HP UX, SGI IRIX, IBM AIX), Linux and MS Windows - **Applications:** L^AT_EX, MS Excel (with intensive VBA programming), MS Word, MS Power Point, html + javascript, Virtual Reality Modeling Language (VRML) - **Code development:** multi-year experience developing mathematical and scientific code for industrial applications, in Fortran, C/C++, Visual Basic, Matlab, mixed programming, parallel programming - **Mathematics:** Maple, Matlab, Mathematica - **Scientific computing:** standard & with user-subroutine development usage of the main commercial codes, including their mutual interfacing; computational mechanics: Ansys, Abaqus, Samcef Mecano; multibody: DADS/Virtual.lab, Adams; computational electromagnetics: Maxwell, CST; computational fluid dynamics and multiphysics: Fluent, CFDACE+; electric circuits: spice, Simulink - **Other:** logistics and process analysis: Witness.

Interests

Mathematics, my greatest passion; basketball, actively played in a team in minor leagues; music (rock and blues). Traveled widely thru Europe, USA and Canada.

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