Loriano Storchi, PhD
Via Di Porta Monacisca 3,
66100 Chieti Italy
Phone: +39 349 260 8596

Education

Università degli Studi di Perugia (Italy)
Ph.D. In Chemistry (Computational Chemistry) with a thesis entitled ”Innovative computational strategies for ab-initio Quantum Chemistry: Grid Computing and novel Green’s function techniques”

Università degli Studi di Perugia (Italy)
Bachelor Degree in Chemistry (Chemical Physics) with a score of 110/110 cum laude discussing a Thesis entitled ”Double Molecular Ionization: effects of ’Foreign Imaging’ and nuclear dynamics hexa-halide of sulfur. ”

Italian National Scientific Qualification (*Abilitazione Scientifica* Nazionale) as Associate Professor of General and Inorganic Chemistry

---

Summary

- Over 15 years of experience in programming. Programming languages include, but not limited to, C/C++, Python, Fortran 77/90. Developing both commercial and academic/research software.

- Over 15 years of experience in High Performance Computing, Parallel and Distributed Computing. Working of various fields such as: Chemioinformatic, Ab-Initio Quantum Chemistry, Computational Chemistry, Computational Physics, High Energy Physics. Experience in Computational Finance

- Over 15 years of Research activity with a multidisciplinary background that is reflected both in the list of my scientific interest, diversify of publications, and as well in my working experience and teaching activity.

- **Languages include**: Italian (mother language), English (advanced), French (basic knowledge)

- **Computer skills include**: Deep knowledge of programming languages : C/C++, Python, Fortran77/90.. Good knowledge of Java, Pascal, Basic, x86 assembly. Deep knowledge of Linux and Unix in general. Excellent also knowledge of Microsoft operating systems. Deep knowledge of networks, network protocols and cloud computing. Deep knowledge of computational architecture (such as modern CPU architecture and memory). Deep knowledge of HPC (High-performance computing), including part of the calculation parallel/multithreaded (MPI, Posix Thread, OpenMP, other shared memory techniques and framework like GlobalArray, ScaLAPACK and other HPC libraries and framework), GPGPU platforms (CUDA, OpenCL), and code optimization. Participation in numerous projects in HPC, Parallel Computing, Grid computing, Cloud Computing, managing both the systems engineering, network, and

programming

My multidisciplinary background is reflected both in the list of my scientific interests, diversity of my publications and surely in my approach to research. My work activity is mainly devoted to computer simulation in both chemical and physical science. In this way I have acquired wide competences in several programming languages and computational and numerical methods, HPC High Performance Computing, parallel and distributed programming, computational architecture (e.g. modern CPU and memory architectures), networks and network protocols. Soon after my degree in Chemistry (110/110 cum laude), my first work experience was at the Dept. of Chemistry and CNR-ISTM. I have worked mainly as a programmer in various fields mainly focusing on the parallelization of computational chemistry programs with different techniques and paradigms. I worked with the Dept. of Computer Science (Pisa), being involved in many computational projects. In 2003 I started my PhD in Chemistry which I successfully completed in 3 years. During this period, in addition to the research activities, I also worked as system and network administrator. In 2007 I received a 3-year research grant entitled "Theoretical study of lifetimes of ionized states through GF and non-Hermitian techniques", working also in the field of Relativistic DFT. I started also working as scientific consultant and programmer with: Molecular Discovery, developing several commercial programs and with CRC (optimization and porting in HPC environments of atmospheric science codes). In 2010 I worked with the INFN for evaluating the computational needs for the Einstein Telescope project, developing codes for gravitational signal analysis. In 2011 I got 1 year research grant at the ISTM aiming to implement methods for the simulation and characterization of TiO2 nanostructured materials. I am now researcher at the Univ. of Chieti and I also started working with INFN in Cloud computing and as Software Engineer at CERN working in the L1 TrackFinding activity (reconstruction Real-time trace of charged particles using FPGA).

Professional Experience

Università G. D'Annunzio Chieti-Pescara Researcher, Assistant Professor December 2011 - present	Since December 2011 I am researcher in General and Inorganic Chemistry at the University of Chieti-Pescara, teaching General and Inorganic Chemistry. During this period I worked also as System and Network administrator for the Theoretical Inorganic Chemistry Group, managing network, servers and HPC resources (http://www-thch.unich.it). And collaborating within the local group in the field of bio and cheminformatics In the very last period I started also a collaboration with a group of Computational Finance manly involved in the devolpement of High Performance Computing code related to the evaluation of the Financial Risk
CNR ISTM **Researcher** January 2017 - present	I am collaborating with the Department of Chemistry of the University of Perugia on projects related to the development of relativistic DFT software. In addition I am still collaborating as associated researcher also with the ISTM (CNR) acting within the projects related to hybrid and organic photovoltaics (Computational Laboratory for Hybrid and Organic Photovoltaics http://www.clhyo.org).
INFN (National Institute of Nuclear Physics) **Researcher** March 2013 – present	I am collaborating with the INFN (National Institute of Nuclear Physics) being involved in the research activity belonging to the CMS experiment. The collaboration is specifically focused in the aspects of computing related to innovative infrastructure solutions based on the CLOUD paradigm, necessary for the deployment of future next computing model. The activity is part of the Working Group "Cloud" INFN Commission for Computing and Networking (local affiliate). During this period I have been involved in **OCP project.** Member of the BM team that has been granted a Iron Medal at the **"Innovate FPGA2018" (http://www.innovatefpga.com, under the name "Reconfigurable Computing")**
CERN (European Organization for Nuclear Research) **Software Engineer**	I am collaborating as software engineer at CERN as part of the group CMS (Compact Muon Solenoid) of Perugia. In this contest I am actively engaged in the development and testing of

March 2014 – present

algorithms track fitting. Following the upgrade LHC (Large Handron Collider) in order to prevent the loss of interesting events will be necessary to use new approaches. In this context the reconstruction Real-time trace of charged articles, may be carried out by the use of Associative Memory and FPGA (Field - Programmable Gate Array). My work is mainly focused on the study and implementation of track fitting algorithms of interest in the project of L1 Track Triggering of the CMS experiment. The study is facing the testing and optimization of the algorithms in order to implement them on a FPGA. As a CERN associated Software Engineer I've been at CERN (Genève) numerous times (Tracker week Phase II upgrade days) to attend meetings and present the results. (Developing a PCA fitter for the L1 track Finding https://github.com/lstorchi/pca_fit and its integration on the CMSSW framework https://github.com/lstorchi/cmssw)

Molecular Discovery Ltd., London UK
Programmer Scientific Consultant
March 2004 - present

In this period I worked as a scientific consultant and programmer for Molecular Discovery Ltd.,London, UK, participating in the development of many commercial programs, a complete review of which can be found at: http://www.moldiscovery.com/. The following list is a subset of the software and scientific contribution that I consider the most significant:

- libgrid/grid: thread safe library and a subsequent (parallel) program inspired to the original GRID developed by Dr. Peter Goodford, a computational procedure for determining energetically favorable binding sites on molecules of known structure. It may be used to study individual molecules such as drugs, molecular arrays such as membranes or crystals, and macromolecules such as proteins, nucleic acids, glycoproteins or polysaccharides. The library is used in several other commercial programs, such as VolSurf+, MetaSite, Almond, Shop, Pentacle, Flap, and more.
- MoKa : in-silico computation of pKa values using a novel approach that provides accurate and fast calculations using an algorithm based on descriptors derived from GRID molecular interaction fields.
- Kibitzer : an automatic and expert tool to expand the MoKa internal database with a corporate database of pKa values.
- libtaut/tauthor: a computational procedure for the enumeration of tautomers and the estimation of their stability in the aqueous medium solution.
- liblogd : a library for logD and logP prediction.
- MoKaBio : in-silico computation of proteins pKa values by environment similarity.
- fixpdb : a procedure for filtering PDB files based also on a PDB residues dictionary.

(Many of the procedures/libraries mentioned above are used by other commercial programs to which I contributed)
During this period, and this collaboration, a worked also on a number of scientific publications in international journals. Acquisition of competences in using the Qt framework also belongs to this collaboration.

ISTM-CNR (Institute of Molecular Science and Technologies)
Staff Scientist
June 2011 – December 2011

I have done research activities at the (ISTM (Institute of Molecular Science and Technology) – CNR of Perugia as holder of a research grant aiming to achieve ”Implementation and optimization of non-relativistic and relativistic DFT codes of parallel computer architectures and multi and many cores (GPU) for advanced simulations materials and processes in organic and hybrid photovoltaics.”. In this period I improved my skills in

	Python programming language, and I acquired skills of VTK (The Visualization Toolkit). The research project involved the development of a software and computational techniques for the simulation of TiO2 nanostructured materials and their characterization, acquiring also skills on computational geometry.
2b Solutions S.R.L. **Programmer Consultant** February 2011 – September 2011	During this period I worked as a programmer developing a tool for database synchronization in python Joomla! in relation to the project ”Tazebao the XXI century”.
CRC (Center for Research on Climate and Climate Change) **Programmer Scientific Consultant** May 2011 – December 2011	I worked as a scientific consultant and programmer for the CRC (Center for Research on Climate and Climate Change) in Perugia with object ”Porting and optimization of code meteorological platforms multi and many cores”
INFN (National Institute of Nuclear Physics) **Staff Scientist** May 2010 – May 2011	I worked as a collaborator with the I.N.F.N. (National Institute of Nuclear Physics) section of Perugia for evaluating the computational needs for the Einstein Telescope project using Many-Core (GPU) environment. During this period I developed and optimized codes for gravitational signal analysis, therefore I acquired the basis skills of the DSP (Digital Signal Processing), as well as in the field of Many-Core programming (GPGPU and beyond). Contemporaneously during this cooperation I co-wrote the Design Study for the Einstein Telescope. At the same time I also worked as a consultant for the SCI (Italian Chemical Society) as a staff organizer of the HOPV2010.

Department of Chemistry University of Perugia **Staff Scientist** January 2007 – December 2009	Grant holder at the University of Perugia entitled ”Theoretical study of lifetimes of ionized states through technical and non-Hermitian Green functions”, with involvement of developing and parallelizing code. In the same period I carry out activity as a Systems and Network Administrator at the ISTM (Institute of Molecular Sciences and Technologies) and a the Department of Chemistry. In the early months of 2009 to carry out activities as a scientific consultant and programmer with The CRC (Center for Research on Climate and Climate Change) of Perugia with object ”Optimizing, porting and management in HPC environments of parallel codes for the simulation of convective weather phenomena in static equilibrium ”played in Project ”AMMA - African Monsoon Multidisciplinary Analysis”. My research activity starting from this period has been devoted also to Relativistic Density Functional Theory. With a specific focus on simulation of big structure involving heavy and super heavy atoms. Contributing to the implementation, optimization and parallelization of BERTHA (Four-Component Relativistic DFT code).
Department of Chemistry University of Perugia **Ph.D. Student** November 2003 – December 2006	Holder of a PhD scholarship at the Department of Chemistry of the University of Perugia. During this period in addition to the research activities I have worked also at the ISTM (CNR) and the Department Chemistry as a System and Network administrator, managing and configuring network and servers (DNS, mail server, dhcp server, web server, and more) and resources clustered HPC Beowulf (see http://www.thch.unipg.it/). Two of the most significant software contributions of this period are the method not-Dyson ADC (3) (Integral Driven) for the simulation of molecular ionization spectra. As well as a portal based on Java Servlet technology for the simulation of potential energy surfaces on a computing grid. During this time I realized also the Chemgrid project (in collaboration with several Italian institution’s), of which I have studied both the systemistic and the software aspects.

Department of Computer Science University of Pisa **Research Grant** June 2003 – November 2003	During this period I worked with the Department of Computer Science University of Pisa for the ”Developing Codes ASSIST parallel environment for chemical applications in the strategic project MIUR (High-performance distributed platform)”. developing a methodology for dynamic memory allocation within the ASSIST framework.
ISTM (Institute of Molecular Science and Technologies) Department of Chemistry University of Perugia **Research Grant** January 2001 – June 2003	To this period belong the first practical work experience immediately following my graduation. During these years I have done activities as a programmer in various fields in addition to support skilled in system management and network. I have done research activities having as its object: ”Parallelization of computational chemistry programs using Message Passing and Shared Memory techniques”, ”Development of ASSIST patterns” and ”Development of parallel programs (MPI and ASSIST Programming)”. Most of my research activist of this period has been essentially carried out in collaboration with ASI (Italian Space Agency) and the Department of Computer Science (University of Pisa).

Publications list

- D. Rongai, N. Sabatini, P. Pulcini, C. Di Marco, L. Storchi, A. Marrone, “Effect of pomegranate peel extract on shelf life of strawberries: computational chemistry approaches to assess antifungal mechanisms involved”, Journal of Food Science and Technology, (2018)
- D'Amico G., Scocchera S., Storchi L. “Financial risk distribution in European Union”, Physica A: Statistical Mechanics and its Applications, 505, 252, (2018)
- De Santis M., Belapassi L., Tarantelli F., Storchi L. “Relativistic quantum chemistry involving heavy atoms”, Rendiconti Lincei, (2018)
- L. Storchi within the CMS Collaboration, Test beam demonstration of silicon microstrip modules with transverse momentum discrimination for the future CMS tracking detector, Journal of Instrumentation, 13, 3, P03003, (2018)
- De Santis M., Rampino S., Quiney H.M., Belpassi L., Storchi L., “Charge-displacement analysis via natural orbitals for chemical valence in the four-component relativistic framework”, Journal of Chemical Theory and Computation, 14, 3, 1286, (2018)
- Guido Magazzu, Christos Gentsos, Geoffrey Christian Galbit, Gian Mario Bilei, Giacomo Fedi, Loriano Storchi, Daniel Magalotti, Oliver Sander, Atanu Modak, Denis Tcherniakhovski, Fabrizio Palla, Bruno Checcucci, Suvankar Roy Chowdhury, Guillaume Baulieu, Sebastien Viret, Matthias Norbert Balzer, “A real-time demonstrator for track reconstruction in the CMS L1 Track-Trigger system based on custom Associative Memories and high-performance FPGAs”, PoS: Proceedings of Science opical Workshop on Electronics for Particle Physics September 11 - September 14 2017
- L. Storchi within the CMS Collaboration [2017], Characterisation of irradiated thin silicon sensors for the CMS phase II pixel upgrade 2017 European Physical Journal C 77(8),567

- L. Storchi within the CMS Collaboration [2017] , P-Type Silicon Strip Sensors for the new CMS Tracker at HL-L-HC , JOURNAL OF INSTRUMENTATION Volume: 12 Article Number: P06018 Published: JUN 2017
- L. Storchi within the CMS Collaboration [2017] , Test beam performance measurements for the Phase I upgrade of the CMS pixel detector JOURNAL OF INSTRUMENTATION Volume: 12 Article Number: P05022 Published: MAY 2017
- S. Rampino, L. Storchi, A. Lagana', "Automated Simulation of Gas-Phase Reactions on Distributed and Cloud Computing Infrastructures", Chapterâ€,inâ€,Lecture Notes in Computer Science July 2017 DOI: 10.1007/978-3-319-62398-6_5 In book: Computational Science and Its Applications â€“ ICCSA 2017, pp.60-73
- L. Storchi within the CMS Collaboration [2017] , "Test beam performance measurements for the Phase i upgrade of the CMS pixel detector", Journal of Instrumentation, Volume 12, Issue 5, 30 May 2017, Article number P05022"
- L. Storchi within the CMS Collaboration [2017] "Mechanical stability of the CMS strip tracker measured with a laser alignment system", Journal of Instrumentation, Volume 12, Issue 4, 21 April 2017, Article number P04023
- Gentsos, C; Fedi, G; Magazzu, G; Magalotti, D; Modak, A; Storchi, L; Palla, F; Bilei, GM; Biesuz, N; Chowdhury, SR; Crescioli, F ; Checcucci, B; Tcherniakhovski, D; Galbit, GC; Baulieu, G; Balzer, MN; Sander, O ; Viret, S; Servoli, L; Nikolaidis, S, "Track Finding Mezzanine for Level-1 Triggering in HL-LHC Experiments", IEEE, 345 E 47TH ST, NEW YORK, NY 10017 USA (2017)
- A, Marrone, N. Re, L. Storchi, "The Effects of Ca^{2+} Concentration and E200K Mutation on the Aggregation Propensity of PrP^{C}: A Computational Study", PlosONE, 11 (12), (2016).
- D. Magalotti, L. Alunni, N. Biesuz, G.M. Bilei, S. Citraro, F. Crescioli, L. Fanò, G. Fedi, G. Magazzù, L. Servoli, L. Storchi, F. Palla, P. Placidi, E. Rossi, A. Spiezia, "A Pattern Recognition Mezzanine based on Associative Memory and FPGA technology for Level 1 Track Triggers for the HL-LHC upgrade" Journal of Instrumentation (JINST), Topical Workshop on Electronics for Particle Physics, 11, C02063, (2016).
- L. Alunni, N. Biesuz, G.M. Bilei, S. Citraro, F. Crescioli, L. Fan´o , G. Fedi ,D. Magalotti , G. Magazzù, L. Servoli, L. Storchi, F. Palla, P. Placidi, A. Papi, Y. Piadyk, E. Rossi, A. Spiezia, "A pattern recognition mezzanine based on associative memory and FPGA technology for L1 track triggering at HL-LHC", Nuclear Instruments and Methods in Physics Research A, 864, 284, (2016)
- L. Storchi within the CMS Collaboration: "Trapping in proton irradiated p(+)-n-n(+) silicon sensors at fluences anticipated at the HL-LHC outer tracker", Journal of Instrumentation , 11, P04023, (2016)
- L. Storchi within the CMS Collaboration, "Impact of low-dose electron irradiation on n(+)p silicon strip sensors", Nuclear Instruments and Methods in Physics Research Section A: Accelerators, Spectrometers, Detectors and Associated Equipment 803, 100, (2015)
- Sergio Rampino, Loriano Storchi and Leonardo Belpassi, "Gold-superheavy-element interaction in diatomics and cluster adducts: A combined four-component Dirac-Kohn-Sham/charge displacement study" J. Chem. Phys. 143, 024307 (2015)
- Loriano Storchi, Roberto Paciotti, Nazzareno Re, Alessandro Marrone, "Investigation of the molecular similarity in closely related protein systems: The PrP case study", Proteins: Structure, Function, and Bioinformatics, (2015)
- L. Storchi, F. Nunzi, F. De Angelis, "Modeling Mesoporous Nanoparticulated TiO2 Films through Nanopolyhedra Random Packing", J. Phys. Chem. C, 119 (19), 10716, (2015)
- S. Rampino, L. Belpassi, F. Tarantelli, and L. Storchi, Full Parallel Implementation of an All-Electron Four-Component DiracKohnSham Program, J. Chem. Theory Comput., 10 (9), 3766, (2014)

- Livio Fano', Gian Mario Bilei, Loriano Storchi, Andrea Valenti, Enrico Fattibene, Matteo Manzali, Davide Salomoni, Valerio Venturi, Paolo Veronesi, Hassen Riahi, Daniele Spiga, Cinzia Amici, Serenella Carota, Francesco Cirillo, Maria Laura Maggiulli, Andrea Sergiacomi, Donatella Settimi, Claudia Diamantini, Domenico Potena, Giuseppa Ribighini, Emanuele Storti, Damiano Falcioni, Daniele Fan, Barbara Re, Prototyping a Cloud Ecosystem for a Regional Public Administration, PoS(ISGC2014)009, International Symposium on Grids and Clouds (ISGC) 2014
- Daniele Spiga, Gian Mario Bilei, Hassen Riahi, Loriano Storchi, Enrico Fattibene, Matteo Manzali, Davide Salomoni, Valerio Venturi, Paolo Veronesi, Claudia Diamantini, Domenico Potena, Laura Raffaeli, Giuseppa Ribighini, Emanuele Storti, Livio Fan, Andrea Valentini, Damiano Falcioni, Daniele Fan, Barbara Re, Cinzia Amici, Serenella Carota, Francesco Cirillo, Maria Laura Maggiulli, Andrea Sergiacomi, Donatella Settimi, A Cloud-based solution for Public Administrations. The experience of the Regione Marche, In Proceedings of the 2014 International Conference on Collaboration Technologies and Systems, pp. 493-499, Minnesota, MN, USA, 19-23 May, 2014, IEEE.
- F. Nunzi, L. Storchi, M. Manca, M. Giannuzzi, G. Gigli, F. De Angelis, "Shape and Morphology Effects on the Electronic Structure of TiO2 Nanostructures: From Nanocrystals to Nanorods" ACS Appl. Mater. Interfaces, 6 (4), 2471, (2014)
- L. Storchi, L. Belpassi, F. Tarantelli, "A parallel all-electron 4-component Dirac-Kohn-Sham program using a distributed memory approach.II". 9 (12), 5356, (2013).
- Francesca Nunzi, Edoardo Mosconi , Loriano Storchi, Enrico Ronca, Annabella Selloni, M. Grtzel, F. De Angelis, "Inherent Electronic Trap States in TiO2 Nanocrystals: Effect of Saturation and Sintering", Energy & Environmental Science, 6(4), 1221, (2013).
- B. Sathyaprakash, …, L. Storchi, … "Scientific objectives of Einstein Telescope", Class. Quantum Grav. 29 (12), 124013, (2012).
- L. Belpassi, L. Storchi, F. Tarantelli, H. M. Quiney, "Recent advances and perspectives in 4-component Dirac-Kohn-Sham calculations", Physical Chemistry Chemical Physics, 13 (27), 12368, (2011)
- P. Bolognesi, A. Kivimaki, P. O'Keeffe, V. Feyer, F. Tarantelli, L. Storchi, and L. Avaldi, "Radiationless decay in the region of the 2t2g and 4eg resonances in SF6", Journal of Chemical Physics, 134 (9), 094308, (2011)
- F. Milletti, L. Storchi, L. Goracci, S. Bendels, B. Wagner, M. Kansy, G. Cruciani, "Extending pKa prediction accuracy: high-throughput pKa measurements to understand pKa modulation of new chemical series", European Journal of Medicinal Chemistry, 45(9), 4270, (2010)
- F. Tarantelli, L. Belpassi, L. Storchi, "Chemical Characterization of Super-Heavy Elements by Four-Component DFT" in Parallel Computing: From Multicores and GPU's to Petascale, ed.: B. Chapman et al. p. 501-512 (IOS Press, Amsterdam, 2010)
- L. Storchi, L. Belpassi, F. Tarantelli, A. Sgamellotti, H. M. Quiney, "An efficient parallel all-electron 4-component Dirac-Kohn-Sham program using a distributed matrix approach". JCTC Journal of Chemical Theory and Computation, 6, 384, (2010).
- Cruciani G., Milletti F., Storchi L., Sforna G., Goracci L., "In silico pK(a) Prediction and ADME Profiling", Chemistry and Biodiversity, 6 (11), 1812, (2009).
- M. Elshakre, L. Storchi, T. Kloda, P. Linusson, F. Heijkenskj¨old, A. Gengelbach, L. Karlsson, T. Hansson, F. Tarantelli, R. Feifel, "A photoelectron and double photoionization study of the valence electronic structure of 1,4-bromofluorobenzene", The Journal of Chemical Physics, 131, 184302, (2009).
- L. Storchi, G. Vitillaro, F. Tarantelli, "Implementation and use of a direct, partially integral-driven non-Dyson propagator method for molecular ionisation", Journal of Computational Chemistry, 30 (5), 818 (2009).

- K. Gokhberg, V. Vysotskiy, L. S. Cederbaum, L. Storchi, F. Tarantelli, V. Averbukh, ”Molecular photoionization cross-sections by Stieltjes-Chebyshev moment theory applied to Lanczos pseudospectra”, The Journal of Chemical Physics, 130, 064104 (2009).
- F. Milletti, L. Storchi, G. Cruciani, ”Predicting Protein pKa by Environment Similarity”, PROTEINS: Structure, Function, and Bioinformatics, 76 (2), 484, (2009).
- Veronesi S., Bolognesi P., O'Keeffe P., Fainelli E., Feyer V., Prince K.C., Plekan O., Coreno M., Tarantelli F., Storchi L., Avaldi L., “Multitechnique investigation of the valence and inner shell excitation, ionization and decay of halogenated pyrimidines”, Journal of Physics: Conference Series, 194, 2, 22057, (2009)
- F. Milletti, L. Storchi, G. Sforna, S. Cross, G, Cruciani, ”Tautomer Enumeration and Stability Prediction for Virtual Screening on Large Chemical Databases” , Journal of Chemical Information and Modeling, 49 (1), 68 (2009).
- P. Linusson, L. Storchi, F. Hejkenskjold, E. Andersson, M. Elshakre, B. Pfeiffer, M. Colombet, J.H.D. Eland, L. Karlsson, J.-E. Rubensson, F. Tarantelli, and R. Feifel, ”Double photoionization of thiophene and bromine substituted thiophenes”, The Journal of Chemical Physics, 129, 234303 (2008).
- L. Storchi and F. Tarantelli, S. Veronesi, P. Bolognesi, E. Fainelli, and L. Avaldi, ”The Auger spectroscopy of pyrimidine and halogen-substituted pyrimidines”, J. Chem. Phys. 129, 154309, (2008).
- F. Milletti, L. Storchi, G. Sforna, G. Cruciani, ”New and original pka prediction method using of GRID molecular interaction fields”, Journal of Chemical Information and Modeling, 47 (6), 2172, (2007).
- R. Feifel, J.H.D. Eland, L. Storchi, F. Tarantelli, ”An experimental and theoretical study of double photoionization of CF4 using time-of-flight photoelectron-photoelectron (photoion-photoion) coincidence spectroscopy”, The Journal of Chemical Physics, 125, 194318 (2006).
- L. Storchi, F. Tarantelli, A. Lagana’, ”Computing molecular energy surfaces on a grid”, Lecture Notes in Computer Science 3980, 675 (2006).
- P. Bolognesi, M. Coreno, L. Avaldi, L. Storchi, F. Tarantelli, ”Site-selected auger electron spectroscopy of N2O”, The Journal of Chemical Physics 125, 054306 (2006).
- R. Feifel, J. H. D. Eland, L. Storchi, F. Tarantelli, ”Complete valence double photoionization of SF6”, The Journal of Chemical Physics 122, 144309 (2005).
- V. Feyer, P. Bolognesi, M. Coreno, K.C. Price, L. Avaldi, L. Storchi, F. Tarantelli, ”Effects of nuclear dynamics in the low kinetic energy Auger spectra of CO and CO2”, The Journal of Chemical Physics 123, 224306 (2005).
- L. Belpassi, L. Storchi, F. Tarantelli, A. Sgamellotti, H. M. Quiney, ”Parallelization of a relativistic DFT code”, Future generation of computer system, 20, 739 (2004).
- L. Storchi, C. Manuali, O. Gervasi, G. Vitillaro, A. Lagan`a, F. Tarantelli, ”Linear algebra computation benchmarks on a model grid platform”, Lecture Notes on Computer Science, 2658, 297, (2003)

Design Study

- L. Storchi within the Einstein Gravitational Telescope Collaboration, ”Einstein gravitational wave Telescope conceptual design study”, ET-0106C-10, Issue: 4, Date: June 28, (2011). URI: https://tds.ego-gw.it/ql/?c=7954

Technical Reports

- L. Storchi, L. Belpassi, F. Tarantelli, A. Sgamellotti, H. M. Quiney, Parallelization of a relativistic DFT, Science and Supercomputing at CINECA - Report, 212 (2005).
- Laganà, F. Tarantelli, O. Gervasi, L. Pacifici, C. Villani, L. Storchi, D. Bellucci, Demonstrators and Benchmarking, ASI-PQE2000 Deliverable WP4.005-6, March 2002.
- Laganà, F. Tarantelli, O. Gervasi, L. Pacifici, C. Villani, L. Storchi, D. Bellucci, Demonstrators and Benchmarking, ASI-PQE2000 Deliverable WP4.007, July 2002.
- Laganà, F. Tarantelli, O. Gervasi, L. Pacifici, C. Villani, L. Storchi, D. Bellucci, Demonstrators and Benchmarking, ASI-PQE2000 Deliverable WP4.004, Jenuary 2002.
- Laganà, F. Tarantelli, O. Gervasi, L. Pacifici, C. Villani, L. Storchi, G. Serazzi, L. Mattoni, P. Cremonesi, P. Mori, Demonstrators and Benchmarking, ASI-PQE2000 Deliverable WP4.003, September 2001

Procedings

- Guglielmo D'Amico, Stefania Scocchera, Loriano Storch, “Financial Risk Distribution in European Union”, 17th Applied Stochastic Models and Data Analysis International Conference with Demographics Workshop ASMDA2017
- L. Storchi, F. Nunzi, S. Fantacci, F. De Angelis, ”Modeling dye-sensitized TiO2 interfaces in dye-sensitized solar cells models”, SimOEAP, International Conference on Simulation of Organic Electronics and Photovotaics, 10-14 June 2012, Spain.
- Gabriele Cruciani, Francesca Milletti, Loriano Storchi, Gianluca Sforna, ”Do pKa predictions matter anymore?”, QSAR2008, Uppsala, Sweden.
- P. Linusson, L. Storchi, F. Heijkenskjld, E. Andersson, M. Elshakre, J.H.D. Eland, L. Karlsson, M. Larsson, J.-E. Rubensson, F.Tarantelli and R. Feifel, ”Double photoionisation of thiophene and bromine substituted thiophenes”, International workshop on photoionization, 2008, Uppsala, Sweden.
- F. Milletti, L. Storchi, G. Cruciani, ”New tools for pKa prediction: from small molecules to proteins”, proceedings of Drug Discovery and Selection, International Conference on Medicinal Chemistry 2007, Lille, France.
- F. Milletti, L. Storchi, G. Sforna, G. Cruciani, ”A new software for pka predictions”, Proceedings of TUMA 2006, Camerino, Italy.
- Leone B. Bosi, Loriano Storchi, ”Impact of GPU Technology on gravitational wave physics and signal detection systems”, E4 Workshop 2010, Bologna, Italy, 16-17 September 2010.
- Alessandro Marrone, Loriano Storchi, Gianpiero Marconi, Emidio Albertini, The gene APOSTART: theoretical and computational study of the binding domain of phytosterols, ”Chemistry Innovation and ...”, University Chieti-Pescara 14 May 2013

Presentation at conferences

- Loriano Storchi, ”The Track Fitter for L1 Tracking”, First H-Team Workshop - Higgs precisionphysics at LHC with Trigger, Electronics and Advanced Methods Thursday 07 April 2016 – Friday 08 April 2016 Cortona – Italy
- ”Computing molecular energy surfaces on a grid”, (ICCSA06), Glasgow, 8-11 May 2006.

- ”SUPSIM: Compunting electronic potential energy surfaces on a GRID”, Tutorial on grid technologies, (ICCSA04), Assisi, 13-14 May 2004
- ”Computing electronic PES on a GRID”, V Edizione del Congresso del Gruppo Italiano di Chimica Computazionale, Siena, 6-18 Dicember 2003

Schools

- ”Summer School of Advanced Calculus - Second Edition”, Castel Gandolfo (Roma), 28 agosto – 8 September 2006.
- ”First Specialistic School on Parallel Computing”, CINECA Casalecchio di Reno (Bologna), 24-28 October 2005.
- ”The 2nd Intenational Summer School on grid computing 2004”, Vico Equense (Napoli), 18-30 July 2004

Workshops and Tutorials

- ”ICT security Day 2012”, University of G. D’Annunzio Chieti-Pescara.
- ”NVIDIA Cuda Workshop”, Roma, Institute of Applied Mathematics (CNR), 19-20 July 2010.
- ”Modeling Winter 2010”, Pisa, Scuola Normale Superiore, February 26, 2010
- ”HPC with CUDA”, Department of Electrical Systems and Automation of the University of Pisa, September 7, 2009.
- ”Developing for Multi-core Intel seminar”, Roma, Italy, November 20, 2008
- ”Joint ICTP-KFAS Workshop on Nanoscience for Solar Energy Conversion”, ICPT, Trieste, Italy, 27-29 October 2008.
- ”Cluster OpenMP Workshop”, CASPUR, Roma, December 7, 2006.
- ”QCDOC and BlueGene Workshop Next generation of HPC architectures”, EPCC, Edinburgh, 4-6 October 2005.
- ”ASSIST Tutorial”, Department of Computer Science University of Pisa, 5-7 May 2004.
- ”ENACTS (European Network for Advanced Computing Technology for Science) 4rd Annual Meeting”, Prague, 11-13 March 2004.
- ”Tutorial on Grid Computing”, Swiss National Supercomputing Center, 25-26 October 2003.
- ”ENACTS (European Network for Advanced Computing Technology for Science) 3rd Annual Meeting”, Dublin, 14-15 March 2003.
- ”Performance Tuning for Microprocessor-Based Systems Workshop”, CINECA Casalecchio di Reno (Bologna), January 17, 2002
- ”INFN-GRID/EDG User Tutorial”, Turin, 5-6 December 2002.
- I also participated with numerous contributions to workshops conducted within the projects: ”ASIPQE2000”, ”GRID.IT”.
- ”High Performance Computing in Chemistry”, NNL, Lecce, 2009.

Periods of study abroad

- Heidelberg (Germania) at: ”Physikalisch-Chemisches Institut (Theoretische Chemie)”. February-March 2005 and April - May 2006

- Budapest (Ungheria) at: ”MTA SZTAKI - Computer and Automation Research Institute of the Hungarian Academy of Sciences”, ”The Chemical Research Center of the Hungarian Academy of Sciences (CRC HAS)”. November - December 2004

Teaching

- Computational Chemistry, Course Degree in C.T.F (University of Chieti-Pescara) - Academic Year 2018/19
- Introduction to programming and computer basics - PhD Course Degree Business and Behavioural Sciences (University of Chieti-Pescara) - Academic Year 2016/2017 – 2017/2018 – 2018/19
- Introduction to Chemo and Bioinformatics - Course Degree in C.T.F (University of Chieti-Pescara) - Academic Year 2015/2016 – Academic Year 2016/17
- General Chemistry - Course Degree in TPALL (University of Chieti-Pescara) - Academic Year 2014/2015 - Academic Year 2015/2016 - Academic Year 2016/2017
- General Chemistry - Course Degree in Assistenza Sanitaria - (University of Chieti-Pescara) - Academic Year 2015/2016 - Academic Year 2016/2017
- General and Inorganic Chemistry - Course Degree in Pharmacy (University of Chieti-Pescara) - Academic Year 2012/2013 - Academic Year 2013/2014 - Academic Year 2015/2016 – Academic Year 2016/201
- General and Inorganic Chemistry - Course Degree in C.T.F. (University of Chieti-Pescara) - Academic Year 2011/2012 (20 hours)
- Computational Chemistry - Course Degree in C.T.F. (University of Chieti-Pescara) – Academic Year 2014/2015 (few hours) - Academic Year 2015/2016 - Academic Year 2016/2017
- Advanced Computational Methods - Course Degree in Computer Science (University of Perugia) - Academic Year 2010/2011 - Academic Year 2011/2012
- Applications and Computing with Network - Course Degree in Computer Science (University of Perugia) - Academic Year 2007/2008 - Academic Year 2008/2009 - Academic Year 2009/2010 - Academic Year 2010/2011
- Applications and Computing with Network II - Course Degree in Computer Science (University of Perugia) - Academic Year 2005/2006
- Computer Science - Degree in Technology for Conservation and Restoration of Cultural Heritage (University of Perugia) Academic Year 2004/2005 - Academic Year 2005/2006 - Academic Year 2006/2007 - Academic Year 2007/2008
- Operating Systems Laboratory 3 - Course Degree in Computer Science (University of Perugia) - Academic Year 2005/2006
- General Laboratory of Computer Science - Course Degree in Computer Science (University of Perugia) - Academic Year 2005/2006 - Academic Year 2006/2007 - Academic Year 2007/2008 - Academic Year 2008/2009
- Lecturer at the TCCM 06 - European Master in Theoretical Chemistry and Computational Modeling - Year 2006
- Atomic and Molecular structures - Course Degree in Computer Science (University of Perugia) -Support to teaching - Academic Year 2003/2004
- One year contract professor for the course ”Applications and Computing with Networks” Degree in Computer Science University of Perugia academic year 2010/2011

Projects

- Open City Platform (OCP) intends to research, develop and test new technology solutions that are open, interoperable and usable on-demand on the Cloud, as well as innovative organizational models that will be sustainable over time. The aim of the project is to innovate, with scientific results and new standards the delivery of services by Local Government Administrations (LGA).
- ASI-PQE2000 within that project I developed and integrated methods for the dynamic allocation of memory in the framework of ASSIST.
- GRID.IT (technical board member) within the project I worked mainly of the activity about ChemGrid.
- ChemGrid I worked as a project coordinator, giving the basis and guidelines for its realization.
- LIGTHS (LIgand to interfere with Human TS).
- DEISA Project ”Chemical Characterization of Super Heavy Elements (E112 and E114) by 4-component relativistic DFT.”
- Many-cores Computing for future Gravitational Observatories (MaCGO). Within this project I worked manly in developing the basic structure of a general porpouse library for computation using many cores environment.
- H-team The discovery of the Higgs boson opens de-facto’ the phase of the precision measurement of its couplings. The aim of this research project is to develop the most advanced trigger, selection and analysis techniques to allow the LHC experiments to gain an order of magnitude with respect to the current levels of accuracy. In such a way it would become possible to explore the existence of new physics over a wide energy regime.

Posters

- ”Chemical Characterization of Super Heavy Elements by four-component relativistic DFT. (CC-SHE)”, Leonardo Belpassi, Loriano Storchi, Francesco Tarantelli, Molecular Properties 2009, Oslo.
- ”Chemical Characterization of Super Heavy Elements by four-component relativistic DFT. (CC-SHE)”, Leonardo Belpassi, Loriano Storchi, Francesco Tarantelli, DEISA Meeting 2009.
- ”An all-electron 4-component Dirac-Kohn-Sham procedure for large molecules and clusters containing heavy elements.” Leonardo Belpassi, Francesco Tarantelli, Antonio Sgamellotti, Loriano Storchi,Harry M. Quiney, ”Joint ICTP-KFAS Workshop on Nanoscience for Solar Energy Conversion”, ICPT, Trieste Italy, 27-29 Ottobre 2008.
- ”Characterization of inner shell excitation, ionization and decay of pyrimidine”, S. Veronesi, P. Bolognesi, E. Fainelli, V.Feyer, K.C.Prince, P.O.Kudelic, M.Coreno, F. Tarantelli, L. Storchi and L. Avaldi., IX School on Synchrotron Radiation: Fundamentals, Methods and Applications, 2007
- ”New tools for pKa prediction - from small molecules to proteins” F. Milletti, L. Storchi, G. Sforna, G. Cruciani. Drug Discovery and Selection, International Conference on Medicinal Chemistry 2007, Lille, France.
- ”MoKa - pKa prediction software”, M. Shalaeva, Z. Zhu, R. Stanton, D. Li, F. Milletti, L. Storchi, G. Sforna, G. Cruciani. EuroQsar 2006, Italy, 10-16 September 2006.
- ”Parallelization of a relativistic DFT code”, L. Belpassi, L. Storchi, F. Tarantelli, A. Sgamellotti, H. M. Quiney. V Edition of the Congress of the Italian Group of Computational Chemistry, Siena, 6-18 Dicember 2003

Thesis Supervisor

- Matteo Picciolini, ”Postprocessing and Display in theoretical simulations of Molecular Spettrosopy”, University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Francesco Muscarà, ”DHCP: virtualization and management”, University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Andrea Lauri, ”Using ScaLAPACK and Adaptive MPI in a Relativistic DFT code”, University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Daniele Bocciolini, ”Use and management of SMARTCARD for authentication procedures”, University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Matteo De Bonis, ”Pseudo-Random number generators on GPU”, University of Perugia, Course Degree in Computer Science, Supervisors: Leonello Servoli, Loriano Storchi, Leone Bosi
- Fabio Andrea Petrini, ”Authentication, Authorization, Accounting for a secure wireless network” University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Lanfranco Fontana, ”Using MPI and Pthreads for parallelization on multi-GPU platform of gravitational signals identification algorithms” University of Perugia, Course Degree in Computer Science, Supervisors: Leonello Servoli, Loriano Storchi, Leone Bosi
- Matteo Picciolini, ”GPGPU and multithreading in molecular ionization spectra computation” University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Antonio Nigro, ”Study and implementation of algorithms for spheres packing in Simulation of nanoporous materials” University of Perugia, Course Degree in Computer Science, Supervisors: Francesco Tarantelli, Loriano Storchi
- Andrea Lauri, ”Development of a gesture controller for a Python molecular visualization system”, University of Perugia, Course Degree in Computer Science, Supervisors:: Francesco Tarantelli, Loriano Storchi, Massimiliano Pippi
- Ermanna Fabbri, ”Algorithms for the packing of spheres and polyhedra in the simulation of nanoporous materials of potential pharmaceutical interest”, University of Chieti’Pescara, Course degree in Pharmacy, Supervisors: Loriano Storchi
- Matteo Pergolesi, ”Design and implementation of a monitoring system for federated cloud infrastructure”, University of Perugia, Corse degree in Computer Engineering, Supervisors: Prof. Gianluca Reali, Dr. Loriano Storchi

Tutor (Stages)

- Matteo De Bonis, ”Test and porting of code on GPU”, at INFN Perugia.
- Metteo Picciolini, ”Implementation of a url shortening service by the development environment provided by google apps using python laguage”, at Evonove s.r.l.
- Antonio Nigro, ”Implementation using Python language of an online system storaging on Google Blobstore backend including client desktop in a transparent manner that supports the symmetric key encryption methodology”, st Evonove s.r.l.
- Andrea Lauri, ”Construction of a gesture-based controller using Microsoft Kinect device”, at Evonove s.r.l.