Prof. Massimo Di Pierro

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PROFILE

Ph.D in High Energy Physics. Expert in **Numerical Algorithms** and applications in Science and Finance. Responsible for the Master Program in Computational Finance at CDM. Advisor of almost all the students in the program. Author of **3 books** and **65 publications** in the fields of Physics, Finance, and Computing. Open Source developer and advocate. Inventor and lead developer of **web2py** (one of the major open source web frameworks, winner of the **Technology of the Year Award in 2012** and the **Bossie Award in 2011**) and **FermiQCD** (a toolkit for parallel Lattice Quantum-Chromodynamics computations).

EXPERIENCE AND EDUCATION

Associate Professor with Tenure **DePaul University**	2007 - Present
Assistant Professor School of Computing, DePaul University	2004 - 2007
Visiting Professor School of Computing, DePaul University	2002 - 2004
Summer Intern at Stanford (**SLAC**-Fermilab exchange program)	2001
Associate Researcher Fermi National Accelerator Laboratory	1999 - 2002
Ph.D. in High Energy Physics University of **Southampton, UK**	1996 - 1999
Summer intern at **CERN** (European Center for Nuclear Research)	1993
BS+MS in Physics (with honors) University of **Pisa, Italy**	1990 - 1996

AWARDS

DePaul **Spirit of Enquiry Award**	2012
Technology of the Year Award for web2py from InfoWorld	2012
Bossie Award for web2py by InfoWorld	2011
Grant from Department of Energy (**Principal Investigator, $300,000**)	2006 - 2011
Ph.D. in High Energy Physics University of Southampton, UK	1996 - 1999
BS+MS in Physics (with honors) University of Pisa, Italy	1990 - 1996

TEACHING (COURSES TAUGHT AT DEPAUL)

(a) Developed original course material. (b) Contributed to propose or revise the course. Signature courses are in bold.

CNS 340 Fundamentals of Information Assurance (a)
CNS 378 Host Based Security (a)
CNS 599 Topics in Information Assurance
CSC 241 Introduction to Computer Science I
CSC 299 Sophomore Lab in Applied Computing (a, b)
CSC 309 Object-Oriented Programming in C++ (a)
CSC 321 Design and Analysis of Algorithms (a)
CSC 390 Fundamentals of Information Assurance
CSC 416 Foundations of Computer Science II
CSC 402 Data Structures in Java I
CSC 403 Data Structures in Java II
CSC 431/331 Scientific Computing (a,b)
CSC 438/308 Framework for Web Application Development (a,b)
CSC 503 Parallel Algorithms (a,b)
CSC 521 Monte Carlo Algorithms (a,b)
CSC 599 Topics in Computer Science
CSC 695 Master's Independent Study
CSC 697 Graduate Internship
CSC 699 Research
ECT 582 Secure Electronic Commerce (a)
GAM 350/450 Physics for Game Developers (a)
IPD 359 Web Development with Python Program (a,b)
IPD 362 Open-Source Web Development Program (a,b)
IT 130 The Internet and the Web (a)
IT 238 Interactive Web Scripting
TDC 399 Independent Study
TDC 561 Network Programming (a)

UNIVERSITY LEVEL SERVICE

Creator (with Prof. Carl Luft) of the MS in Computational Finance 2005
Advisor of almost all the students in the MSCF program 2005 - Today
Co-chair of the Teaching and Learning with Technology Committee 2007 - 2012
Member of the Teaching and Learning with Technology Committee 2007 - Today
Member of the Faculty Council Budget Committee 2005-2006, 2014 - Today
Alternate Member of Faculty Council
Conducted interviews for the Schmidt Bauer Scholarship 2004 - 2005

COLLEGE LEVEL SERVICE

Advisor of ~60 students each year in the MS-CF and MS-CS degrees 2001 - Today
Supervised ~30 students in independent study projects 2001 - Today
Responsible for the Assessment of the MS-CF degree 2005 - Today
Member of the Financial Award Committee 2004 - Today
Chair of the Financial Award Committee 2004 - 2005 & 2014
(coordinated review of applicants for many scholarships, developed software for reviews)

Member of the Join Degree Committee 2005 - Today
Chair of the Joint Degree Committee 2013 - 2014
(coordinated many MS-CF revisions with the College of Commerce)
Member of the PC-CS 2001 - Today
(contributed to develop many courses listed under TEACHING)
Member of the SOC Curriculum Committee (former Grad Committee) 2002 - Today
Member and Chair of the Colloquium Committee 2004 - 2005
Member of the PC-CINS 2004 - 2006
(contributed to create some of the courses listed under TEACHING)
Advisor of the Linux Users Group (student organization) 2004 - 2006
Author and grader for Graduate Admission Exams (C++/Calc)
Contributed to many events every year
(including open houses, premier advising, accelerated admissions, panel discussions, etc.)
Organized the web2py conference at CDM (raised $4000) 2014
Organized an OpenHatch event 2014

OTHER PROFESSIONAL SERVICE

Lead developer of web2py (http://web2py.com) 2007 - Today
Lead developer of FermiQCD (http://fermiqcd.net) 1999 - Today
Editor of "Computing in Science and Engineering" (IEEE Publication) 2007 - Today
Reviewer for the American Mathematical Society 2000 - Today
On Review Board of "International Journal of Computational Science" 2007 - Today
Developer of the NERSC "Gauge Connection" (http://qcd.nersc.gov) 2011 - Today
Organizer for 6th High End Visualization Workshop Obergurgl, Austria 2010
Founder and manager of MetaCryption LLC 2002 - 2013

OTHER SERVICE

Volunteer at the Lincoln School PTO in Oak Park 2010 - Today
Contributor to the Sahana Eden Project (disaster management for Haiti) 2010 - Today
Lead Developer for United Nations Web Site Project 2003 - 2006

MEMBERSHIP

Member of the American Physical Society (APS)
Member of the Association of the Computing Machinery (ACM)

PUBLISHED BOOKS

M. Di Pierro, "Annotated Algorithms in Python" 2013
(388 pages, E4S Press, ISBN:978-0991160402)
M. Di Pierro, "web2py Manual 5th Ed" 2013 (5th ed)
(614 pages, E4S Press, ISBN: 978-0578120218 2008 (1st ed)
translated into Spanish, Italian, and Japanese; translations in progress
in Chinese, Portuguese, French, Russian, Czech, Polish, and Turkish)
M. Di Pierro at al., "web2py Application Development Cookbook" 2012
(364 pages, Packt Publishing, ISBN 978-1849515467)

OTHER PUBLICATIONS

(https://dl.dropboxusercontent.com/u/18065445/Publications/index.html)

M. Di Pierro, "Portable Parallel Programs with Python and OpenCL", CiSE, (ISSN:1521-9615) (2014)

M. Di Pierro, "QCL: OpenCL meta programming for lattice QCD", Proceedings of the XXXI International Symposium on Lattice Field Theory - Lattice 2013, Aug 3, 2013

M. Di Pierro et al., "The new Gauge Connection at NERSC", Proceedings of the XXXI International Symposium on Lattice Field Theory - Lattice 2013, Aug 3, 2013

M. Di Pierro and D. Skinner, "Concurrency in Modern Programming Languages", CiSE, (ISSN: 1521-9615) (2012)

E. T. Neil et al., "B and D meson decay constants from 2+1 flavor improved staggered simulations", Proceedings of the XXIX International Symposium on Lattice Field Theory - Lattice 2011, July 10-16, 2011, Squaw Valley, Lake Tahoe, California, arXiv:1112.3978 [hep-lat] FERMILAB-CONF-11-661-T(2011)

A. Bazavov et al., "B- and D-meson decay constants from three-flavor lattice QCD", (submitted to Physical Review), arXiv:1112.3051 [hep-lat] FERMILAB- PUB-11-651-T(2011)

M. Di Pierro, "web2py for scientific applications", CiSE, (ISSN:1521-9615) (2011)

C. Bernard et al. , "Tuning Fermilab Heavy Quarks in 2+1 Flavor Lattice QCD with Application to Hyperfine Splittings", Phys. Rev. D 83, 034503 (2011) [arXiv:1003.1937 [hep-lat]]

M. Di Pierro, J. Hetrick, S. Cholia, D. Skinner, "Making QCD Lattice Data Accessible and Organized through Advanced Web Interfaces", Proceedings of the XXIX International Symposium on Lattice Field Theory - Lattice 2011, July 10-16, 2011, Squaw Valley, Lake Tahoe, California

C. Schroeder and M. Di Pierro, "Pattern Derivatives", International Journal of Financial Markets and Derivatives, Vol. 2 N. 4 (2011).

M. Di Pierro and J. Mosevich, "Effects of skewness and kurtosis on portfolio rankings", Quantitative Finance, 1469-7696, (2010)

M. Di Pierro, Y. Zhong and B. Schinazi, "Vis: Online analysis tool for lattice QCD", PoS LATTICE2010, 326 (2010)

T. Burch et al., "Quarkonium mass splittings in three-flavor lattice QCD", Phys. Rev. D 81, 034508 (2010) [arXiv:0912.2701 [hep-lat]]

M. Di Pierro, "Vis: QCD workflow and visualization tool", in Proceedings of the 6th High End Visualization Workshop, Dec 8th - 12th, (2010), Obergurgl (Austria), Lehmanns Media, ISBN 978-3-86541-361-1

M. Di Pierro, Y. Zhong and B. Schinazi, "mc4qcd: Online Analysis Tool for Lattice QCD", PoS ACAT2010, 054 (2010) [arXiv:1005.3353 [hep-lat]]

A. Bazavov et al., "The Ds and D+ Leptonic Decay Constants from Lattice QCD", PoS LAT2009, 249 (2009) [arXiv:0912.5221 [hep-lat]]

J. A. Bailey et al., "Progress on charm semileptonic form factors from 2+1 flavor lattice QCD", PoS LAT2009, 250 (2009) [arXiv:0912.0214 [hep-lat]]

J. A. Bailey et al., "The B -> pi l nu semileptonic form factor from three-flavor lattice QCD: A Model-independent determination of -V(ub)-", Phys. Rev. D 79, 054507 (2009) [arXiv:0811.3640 [hep-lat]]

C. Bernard et al., "The Anti-B -> D* l anti-nu form factor at zero recoil from three-flavor lattice QCD: A Model independent determination of -V(cb)-", Phys. Rev. D 79, 014506 (2009) [arXiv:0808.2519 [hep-lat]]

M. Di Pierro and Y. Zhong, "Analysis and visualization tools for Lattice QCD", PoS LAT2009, 038 (2009),

T. Burch et al., "Quarkonium mass splittings with Fermilab heavy quarks and 2+1 flavors of improved staggered sea quarks" PoS LAT2009, 115 (2009) [arXiv:0911.0361 [hep-lat]]

M. Di Pierro et al., "Visualization as a tool for understanding QCD evolution algorithms", J. Phys. Conf. Ser. 180, 012068 (2009)

C. Bernard et al., "Visualization of semileptonic form factors from lattice QCD", Phys. Rev. D 80, 034026 (2009) [arXiv:0906.2498 [hep-lat]]

M. Di Pierro and J. Mosevich, "Portfolio Rankings with skewness and kurtosis", proceedings of Computational Finance and its Applications III (ISBN: 1-84564-111-5) (2008)

C. Bernard et al., "B and D Meson Decay Constants", PoS LATTICE2008, 278 (2008) [arXiv:0904.1895 [hep-lat]]

M. Di Pierro and J. Mosevich, "Analysis of Ranking Factors For a Risk Averse Investor in a Non-Gaussian World, Journal of Performance Measurement", pp.53- 58 (2007)

M. Di Pierro, "A Visualization Toolkit for Lattice Quantum Chromodynamics", in Proceedings of the 4th High End Visualization Workshop, June 18th - 22th, (2007), Obergurgl (Austria), Lehmanns Media, ISBN 9783865412164

C. Bernard et al., "The decay constants f(B) and f(D+) from three-flavor lattice QCD", PoS LAT2007, 370 (2007)

M. Di Pierro, "Visualization for lattice QCD", PoS LAT2007, 031 (2007)

R. Todd Evans, E. Gamiz, A. X. El-Khadra and M. Di Pierro, "A Determination of the B0(s) and B0(d) mixing parameters in 2+1 lattice QCD", PoS LAT2007, 354 (2007) [arXiv:0710.2880 [hep-lat]]

M. Di Pierro and A. Nandy, "Monte Carlo Risk Management", WIT Transactions on Modelling and Simulation, Vol 43, WIT Press (2006) doi:10.2495/CF060371

S. A. Gottlieb, L. Levkova, M. Di Pierro, A. X. El-Khadra, A. S. Kronfeld, P. B. Mackenzie and J. N. Simone, "Update on onium masses with three flavors of dynamical quarks", PoS LAT2006, 175 (2006) [arXiv:0910.0048 [hep-lat]]

M. Di Pierro and J. Mosevich, "On ranking schemes and portfolio selection", in Hedge Fund Investment Management, edited by Izzy Nelken, Elsevier (2006)

C. Bernard et al., "The decay constants f(B+) and f(D+) from three-flavor lattice QCD", PoS LAT2006, 094 (2006)

R. T. Evans, A. X. El-Khadra and M. Di Pierro, "A study of the B/s - anti-B/s mass and width difference in 2+1 flavor lattice QCD" PoS LAT2006, 081 (2006)

P. B. Mackenzie et al., "B and D meson semileptonic decays in three-flavor lattice QCD", PoS LAT2005, 207 (2006)

S. Gottlieb et al., "Onium masses with three flavors of dynamical quarks", PoS LAT2005, 203 (2006) [arXiv:hep-lat/0510072]

A. S. Kronfeld et al., "Predictions from lattice QCD", Int. J. Mod. Phys. A 21, 713 (2006) [PoS LAT2005, 206 (2006)] [arXiv:hep-lat/0509169]

M. Di Pierro and J. M. Flynn, "Lattice QFT with FermiQCD", PoS LAT2005, 104 (2006) [arXiv:hep-lat/0509058]

M. Di Pierro, "An algorithmic approach to quantum field theory", Int. J. Mod. Phys. A 21, 405 (2006) [arXiv:hep-lat/0509013]

C. Aubin et al., "Charmed meson decay constants in three-flavor lattice QCD", Phys. Rev. Lett. 95, 122002 (2005) [arXiv:hep-lat/0506030]

J. N. Simone et al., "Leptonic decay constants f(D/s) and f(D) in three flavor lattice QCD", Nucl. Phys. Proc. Suppl. 140, 443 (2005) [arXiv:hep-lat/0410030]

M. Okamoto et al., "Semileptonic D->pi / K and B->pi/D decays in 2+1 flavor lattice QCD", Nucl. Phys. Proc. Suppl. 140, 461 (2005) [arXiv:hep-lat/0409116]

C. Aubin et al., "Semileptonic decays of D mesons in three-flavor lattice QCD", Phys. Rev. Lett. 94, 011601 (2005) [arXiv:hep-ph/0408306]

M. Di Pierro et al., "www.fermiqcd.net", Nucl. Phys. Proc. Suppl. 129, 832 (2004) [arXiv:hep-lat/0311027]

M. Di Pierro et al., "D/s spectrum and leptonic decays with Fermilab heavy quarks and improved staggered light quarks", Nucl. Phys. Proc. Suppl. 129, 328 (2004) [arXiv:hep-lat/0310045]

M. Di Pierro et al., "Properties of charmonium in lattice QCD with 2+1 flavors of improved staggered sea quarks", Nucl. Phys. Proc. Suppl. 129, 340 (2004)
[arXiv:hep-lat/0310042]

M. Okamoto et al., "Semileptonic decays of D mesons in unquenched lattice QCD", Nucl. Phys. Proc. Suppl. 129, 334 (2004) [arXiv:hep-lat/0309107]

C. T. H. Davies et al., "High-precision lattice QCD confronts experiment", Phys. Rev. Lett. 92, 022001 (2004) [arXiv:hep-lat/0304004]

M. Di Pierro, "A Bird's eye view of Matrix Distributed Processing", arXiv:cs/0303031
Proceedings of International Conference on Computational Science and its Applications (ICCSA 2003), Montreal, Quebec, 18-21 May 2003

L. Del Debbio, M. Di Pierro and A. Dougall, "The second moment of the pion light cone wave function", Nucl. Phys. Proc. Suppl. 119, 416 (2003) [arXiv:hep-lat/0211037]

M. Di Pierro et al., "Charmonium with three flavors of dynamical quarks", Nucl. Phys. Proc. Suppl. 119, 586 (2003) [arXiv:hep-lat/0210051]

M. Di Pierro and P. B. Mackenzie, "Nonperturbative tuning of O(a^2) im- proved staggered fermions", Nucl. Phys. Proc. Suppl. 106, 777 (2002) [arXiv:hep-lat/0110120]

M. Di Pierro, "FermiQCD: A tool kit for parallel lattice QCD applications", Nucl.Phys. Proc. Suppl. 106, 1034 (2002) [arXiv:hep-lat/0110116]

M. Di Pierro and E. Eichten, "Excited heavy-light systems and hadronic transitions", Phys. Rev. D 64, 114004 (2001) [arXiv:hep-ph/0104208]

M. Di Pierro and E. Eichten, "Hadronic decays of excited heavy mesons", Nucl. Phys. Proc. Suppl. 93, 130 (2001) [arXiv:hep-ph/0009177]

M. Di Pierro, "B lifetimes from lattice simulations", Nucl. Phys. Proc. Suppl. 86, 529 (2000)

M. Di Pierro, "MDP 1.0: Matrix distributed processing", Comput. Phys. Commun. 141, 98 (2001) [arXiv:hep-lat/0004007]

G. M. de Divitiis, L. Del Debbio, M. Di Pierro, J. M. Flynn and C. Michael, "Lattice determination of the B* B pi coupling", Nucl. Phys. Proc. Suppl. 83, 277 (2000) [arXiv:hep-lat/9909148]

L. Del Debbio, M. Di Pierro, A. Dougall and C. T. Sachrajda, "The second moment of the pion's distribution amplitude", Nucl. Phys. Proc. Suppl. 83, 235 (2000) [arXiv:hep-lat/9909147]

M. Di Pierro, C. T. Sachrajda and C. Michael, "An exploratory lattice study of spectator effects in inclusive decays of the Lambda/b baryon", Phys. Lett. B 468, 143 (1999) [arXiv:hep-lat/9906031]

M. Di Pierro and C. T. Sachrajda, "Spectator effects in inclusive decays of beauty hadrons", Nucl. Phys. Proc. Suppl. 73, 384 (1999) [arXiv:hep-lat/9809083]

G. M. de Divitiis, L. Del Debbio, M. Di Pierro, J. M. Flynn, C. Michael and J. Peisa, "Towards a lattice determination of the B* B pi coupling", JHEP 9810, 010 (1998) [arXiv:hep-lat/9807032]

M. Di Pierro and C. T. Sachrajda [UKQCD Collaboration], "A lattice study of spectator effects in inclusive decays of B mesons", Nucl. Phys. B 534, 373 (1998) [arXiv:hep-lat/9805028]

M. Di Pierro and K. Konishi, "Mass, Confinement and CP Invariance in the Seiberg-Witten Model", Phys. Lett. B 388, 90 (1996) [arXiv:hep-th/9605178]

RECENT TALKS/TUTORIALS (NON-ACADEMIC CONFERENCES)

Talk at OWASP Orange County	2014
web2py Tutorial at Creative Artists Agency	2014
Talk and EuroPython (Florence)	2013
Plenary Talk & Tutorial at PyCon Brazil	2012
Plenary Talk & Tutorial at PyCon Argentina	2012
Talk at PyCon	2012
Tutorial on web2py at PyCon	2011
Tutorial on web2py at EuroPython	2010
Tutorials on Scientific Computing at Supercomputing	2009, 2010