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DIEGO FAZI, Ph.D.

Education

Università degli Studi di Bologna / California Institute of Technology (Caltech); Ph.D. in Physics (2009)
GPA equivalent: 4.00/4.00

Major: Theoretical Physics and Mathematical Methods

Thesis Title: *Development of a physical-template search for gravitational waves from spinning compact-object binaries with LIGO*

Awards:

- Italian Education Ministry Fellowship - $44,528 (2005-2008)
- LIGO-Caltech research fellowship - $36,000 (2005-2008)
- Caltech-TAPIR research fellowship - $34,800 (2008-2009)
- Honorable mention for the 2009 *Gravitational Wave International Committee* (GWIC) Ph.D. Thesis Prize

Università degli Studi di Bologna; B.S. and M.S. (Laurea) in Physics (2004)
GPA equivalent: 3.95/4.00

Major: Nuclear and Subnuclear Physics

Thesis Title: *Gravitational collapse of a radiating shell composed of charged bosonic matter*

Awards: Summa Cum Laude (110/110 with Maximum Honors) (2004)

Work Experience

Argonne National Laboratory and **Argonne-Northwestern Solar Energy Research Center (ANSER) (2012-present)**
Postdoctoral Appointee

- Creating novel materials (catalysts) that use solar energy to produce clean hydrogen fuel from water
- Studying the catalysts' molecular structure through x-ray experiments to improve their functionality and optimize their performance for hydrogen-production
- Developed innovative parallel-computing software to automatically compare data with structural models, with a speed-up of ~1,000,000 with respect to standard techniques

Northwestern University and Center for Interdisciplinary Exploration and Research in Astrophysics (2009-2012)
Postdoctoral Fellow

- Implemented and tested a new data analysis strategy (ANSI C) to search for gravitational wave signals in large data sets, providing an increase in detection efficiency of up to 100% with respect to standard techniques
- Contributed developing a Markov Chain-Monte Carlo (MCMC) Bayesian code for parameter estimation of gravitational-wave astrophysical sources
- Led and coordinated 6-person research team within the LIGO-Virgo Collaboration (LVC) data analysis group
- Presented research results to the audience of the LVC (800 scientists) and at various conferences/symposia
- Awarded grant for 764,640 CPU hours on Northwestern's Quest supercomputer as Principal Investigator

California Institute of Technology, Department of Physics (2005-2009)
Visiting Research Scholar (2005-2009) - Postdoctoral Fellow (2009)

- Wrote computer code to model signals emitted by black-hole binaries and integrated it in a large software library used by more than 800 scientists of the LIGO-Virgo collaboration
- Developed advanced data-analysis computational tools currently used in the search for gravitational-waves by the LIGO-Virgo collaboration
- Performed data analysis on high-performance supercomputers at Caltech and the Max Planck Institute (Germany)
- Self-taught C and Matlab programming for high-performance scientific applications

Technology Innovation and Commercialization

Argonne National Laboratory; Entrepreneurial Lead with project FSCC, as part of the I-Corps Program **(Current)**
Chicago Innovation Exchange; Innovation Fund Associate **(2014)**

Cleantech Open; Metro Director for the Chicago area, Startup Consultant **(2014-present)**
UIC Institute for Entrepreneurial Studies; Student Team Mentor **(September 2014)**
Postdoctoral Society of Argonne; Board Member, Mentoring Committee, Innovation Group Coordinator **(2012-present)**
Clean Energy Trust; Startup Consultant **(2014 and 2015)**

Business and Professional Training

Argonne National Laboratory;

- *I-Corps Program, DOE* Technology Commercialization Program for academia (May 2015, present)
- *Marketing for Scientists*, Workshop (June 19, 2013)
- *10 Best Practices for Proposal Success*, Workshop (March 13, 2013)
- *Elements of Effective Mentoring*, Workshop (March 1, 2013)

Chicago Innovation Exchange, University of Chicago;

- *Innovation Fund Associates Program: Chicago*, Venture Capital Associate program (September-December, 2014)

Cleantech Open;

- *Summer Business Clinic: Chicago*, Business Bootcamp (August 27, 2014)
- *2014 East Coast Academy*, Business Bootcamp (June 17-18, 2014)

Clean Energy Trust; *Startup Sessions*, Workshop (December 4, 2013)
Kellogg School of Management; *2012 Challenges for Electricity Markets*, Workshop (May 4-5, 2012)
The University of Chicago;

- *Life Cycle Analysis of Energy Systems using the GREET Model*, Workshop (May 18, 2012)
- *Energy and Environmental Systems Analysis using Agent-Based Modeling*, Workshop (February 24, 2012)

Leadership Experience

Cleantech Open; Chicago Metro Director **(2014-present)**
Midwest Postdoctoral Forum; Co-founder and Board Member (**2013-present)**
Postdoctoral Society of Argonne; Board Member, Initiator and Member of the Mentoring Committee **(2012-present)**
Citizens' Greener Evanston; Board Member and Member of the Education and Outreach Committee **(2010-2012)**

Publications (2 of 73)

- *Domain structure for an amorphous iridium-oxide water-oxidation catalyst characterized by X-ray pair distribution function analysis*, J. Huang, J. D. Blakemore, **D. Fazi**, O. Kokhan, N. D. Schley, R. H. Crabtree, G. W. Brudvig and D. M. Tiede, 2014; **Physical Chemistry Chemical Physics, 16**, 1814-1819
- *Basic Parameter Estimation of Binary Neutron Star Systems by the Advanced LIGO/Virgo Network*, C. Rodriguez, B. Farr, V. Raymond, W. Farr, T. Littenberg, **D. Fazi**, V. Kalogera, 2014; **The Astrophysical Journal**, **784**, 119

Invited Presentations (2 of 13)

- *Structural and Functional Characterization of Amorphous Metal-oxide Water-splitting Catalysts Using High Energy X-ray Scattering combined with Pair Distribution Function Analysis*, Iowa State University (June 10, 2013)
- *From Gravitational Waves to Solar Fuels: Data Analysis Techniques*, Argonne National Laboratory, (June 15, 2012)

Areasof Expertise and Technical Skills

- Clean Technologies
- Due Diligence and Technology Commercialization
- Advanced Materials for Solar-to-Hydrogen conversion
- High-Energy X-ray Scattering Experiments and Data Analysis
- Gravitational Waves Theory, Modeling and Data Analysis
- Code Development and Computational Modeling
- High Performance and Parallel Programming