

Veronica Guidetti

Born in Modena (MO) on 15/11/1991
Address of residence: strada Vignolese 1350/2, 41126, Modena
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Work Experience

01/2023 - now Postdoctoral position

University of Modena and Reggio Emilia

Group leader: Federica Mandreoli

Topic: Machine Learning, Data Mining, AI applications for healthcare

11/2020 - 11/2022 Postdoctoral position

DESY- Deutsches Elektronen-Synchrotron, Hamburg

Group leader: Alexander Westphal, Geraldine Servant

Topic: Cosmology, Machine learning, String Phenomenology

Education

11/2017 - 03/2021 PhD Course in Theoretical Physics cum Laude

Alma Mater Studiorum, University of Bologna

Supervisor: Prof. Michele Cicoli

Thesis: Axion-like particles and inflation from string theory

01-04/2019 Visiting PhD student

DESY- Deutsches Elektronen-Synchrotron, Hamburg

Local tutors: Valerie Domcke, Alexander Westphal

01-06/2017 Research Scholarship

Alma Mater Studiorum, University of Bologna - INFN Bologna

Department of Physics and Astronomy

Supervisor: Prof. Michele Cicoli

Project title: Study of Dark Matter Models in String Compactification

Bando: https://bandi.unibo.it/agevolazioni/borse-laureati?id_bando=451

03/2017 Post Graduate Diploma in Mathematical Finance, 30/30 cum Laude

Alma Mater Studiorum, University of Bologna

Department of Mathematics

Course Directors: Prof. Andrea Pascucci, Prof. Sergio Polidoro

Website: <http://www.dm.unibo.it/finanza/>

04/2016 Master Course in Theoretical Physics, 110/110 cum Laude

Alma Mater Studiorum, University of Bologna

Thesis: "Axion-like particles and the 3.5 keV line in 4D string models"

Supervisor: Prof. Michele Cicoli

07/2013 Bachelor Course in Physics, 110/110 cum Laude

University of Modena and Reggio Emilia

Thesis: "Simulazione Monte Carlo del trasporto elettronico in materiali amorfi"

Supervisor: Prof. Carlo Jacoboni

Publications:

Web pages [Google Scholar profile](#)
[Scopus profile](#)

11/2023 Death after Liver Transplantation: Mining Interpretable Risk Factors for Survival Prediction.

Guidetti, V., Dolci, G. Franceschini, E., et al.

IEEE International Conference on Data Science and Advanced Analytics (DSAA). IEEE, 2023..

11/2023 Generalizing similarity in noisy setups: the DIBS phenomenon.

Nayara Fonseca, Veronica Guidetti

European Conference on Artificial Intelligence, ECAI 2023

[arXiv:2201.12803](#) .

07/2023 Automated Knowledge Graph Completion for Natural Language Understanding: Known Paths and Future Directions.

Buzzega, G.; Guidetti, V.; Mandreoli, F. et al.

Proceedings of the 31st Symposium of Advanced Database Systems, 2023.

05/2023 Probing optimisation in physics-informed neural networks.

Fonseca, N., Guidetti, V., and Trojak, W.

ICLR 2023 workshop Physics4ML.

[arXiv:2303.15196](#) .

02/2023 Multi-Objective Symbolic Regression for Data-Driven Scoring System Management

Davide Ferrari, Veronica Guidetti and Federica Mandreoli

Proceedings of IEEE International Conference on Data Mining (ICDM) 2022

([link to the conference program](#)) .

01/2023 Axionic Festina Lente

Veronica Guidetti, Nicole Righi, Gerben Venken, Alexander Westphal

JHEP **01** (2023), 114, [arXiv:2206.03494](#) .

01/2023 On the choice of entropy variables in multifield inflation

Michele Cicoli, Veronica Guidetti, Francesco Muia, Francisco Gil Pedro, Gian Paolo Vacca

Class. Quant. Grav. **40** (2023) no.2, [arXiv:2107.03391](#) .

11/2022 Multi-objective Symbolic Regression to Generate Data-driven, Non-fixed Structure and Intelligible Mortality Predictors using EHR: Binary Classification Methodology and Comparison with State-of-the-art

Davide Ferrari, Veronica Guidetti, Yanzhong Wang, Vasa Curcin

Proceedings of American Medical Informatics Association (AMIA) 2022 Annual Symposium, ([link](#)) .

10/2022 Real-world data mining meets clinical practice: research challenges and perspective

Federica Mandreoli, Davide Ferrari, Veronica Guidetti, Federico Motta and Paolo Missier

Frontiers in big Data, 2022, 99", ([link](#)) .

09/2022 A Fake Instability in String Inflation

Michele Cicoli, Veronica Guidetti, Francesco Muia, Francisco Gil Pedro, Gian Paolo Vacca

Class. Quant. Grav. **39** (2022) no.19, [arXiv:2107.12392](#) .

05/2022 Fuzzy dark matter candidates from String Theory

Michele Cicoli, Veronica Guidetti, Nicole Righi, Alexander Westphal

JHEP **2205** (2022) 107, [arXiv:2110.02964](#) .

02/2021 dNNsolve: an efficient NN-based PDE solver

Veronica Guidetti, Francesco Muia, Yvette Welling, Alexander Westphal
[arXiv:2103.08662](#) .

02/2020 Resonant backreaction in axion inflation

Valerie Domcke, Veronica Guidetti, Yvette Welling, Alexander Westphal
JCAP 2009 (2020) no.09, 009, [arXiv:2002.02952](#) .

03/2019 Geometrical Destabilisation of Ultra-Light Axions in String Inflation

Michele Cicoli, Veronica Guidetti, Francisco G. Pedro,
JCAP 1905 (2019) no.05, 046, [arXiv:1903.01497](#) .

07/2018 A geometrical instability for ultra-light fields during inflation?

Michele Cicoli, Veronica Guidetti, Francisco G. Pedro, Gian Paolo Vacca,
JCAP 1812 (2018) no.12, 037, [arXiv:1807.03818](#) .

11/2017 Chiral Global Embedding of Fibre Inflation Models

Michele Cicoli, David Ciupke, Victor A. Diaz, Veronica Guidetti, Francesco Muia, Pramod Shukla,
JHEP 1711 (2017) 207, [arXiv:1709.01518](#) .

10/2017 The 3.5 keV Line from Stringy Axions

Michele Cicoli, Victor A. Diaz, Veronica Guidetti, Markus Rummel,
JHEP 1710 (2017) 192, [arXiv:1707.02987](#) .

Research interests:

- Interpretable AI
- AI applications to healthcare and physics
- Theory and generalization in deep learning
- Improving Physics-Informed NN method efficiency and generalization
- Effective Deep Learning theory

Participation at conferences, courses and seminars

10/2023 IEEE International Conference on Data Science and Advanced Analytics (DSAA) 2023

Thessaloniki, Greece

October 09 - 13.

Site: <https://conferences.sigappfr.org/dsaa2023/>

Talk: Death after Liver Transplantation: Mining Interpretable Risk Factors for Survival Prediction.

10/2023 European Conference on Artificial Intelligence, ECAI 2023

Krakow, Poland

September 26 - October 04.

Site: <https://ecai2023.eu>

Talk: Generalizing similarity in noisy setups: the DIBS phenomenon

06/2023 Theoretical Physics for Deep Learning, summer program workshop

Aspen, Colorado

May - June 2023.

11/2022 IEEE International Conference on Data Mining (ICDM) 2022

Orlando, Florida

November 28 - December 01.

Site: <https://icdm22.cse.usf.edu>

Talk: Multi-Objective Symbolic Regression for Data-Driven Scoring System Management

09/2022 DESY Theory workshop convenor

DESY - Hamburg

September 27 - September 30.

Site: <https://th-workshop2022.desy.de>

Convenor of Cosmology & Astroparticle Physics parallel session

09/2022 Coursera online courses

Probabilistic Deep Learning with TensorFlow 2 ([Website](#))

09/2022 Machine learning at GGI workshop

GGI - Florence

September 12 - September 23.

Site: <https://agenda.infn.it/event/32043/>

Talk: Generalization in Similarity Learning

09/2022 Towards the Next Fundamental Scale of Nature: New Approaches in Particle Physics and Cosmology

Mainz Institute for Theoretical Physics, Johannes Gutenberg University

July 11 - July 15.

Site: <https://indico.mitp.uni-mainz.de/event/261/>

04/2022 Intelligent Health UK 2022

ExCeL, London

April 6 - April 7.

Site: <https://iii.hm/healthaiuk2022>

09/2021 DESY Theory workshop

DESY - Hamburg

September 21 - September 24.

Site: <https://th-workshop2021.desy.de>

Talk: Double descent in contrastive learning

11-12/2020 Coursera online courses

Deep Learning Specialization (Website)

TensorFlow: Advanced Techniques Specialization (Website)

07/2020 Fuzzy Dark Matter Workshop

Web conference

July 20 - July 23.

Site: <https://indico.desy.de/indico/event/25188/>

Talk: Fuzzy dark matter from strings?

06/2020 StringPheno 2020

Web conference

June 08 - June 12.

Site: https://web.northeastern.edu/het/string_pheno/

12/2019 XV Avogadro meeting on Strings, Supergravity and gauge theories

Naples University,

December 18 - December 20, Naples, Italy.

Site: <https://agenda.infn.it/event/19816/>

Talk: Fuzzy dark matter from strings: how viable?

10/2019 TFI 2019: Theories of Fundamental Interactions 2019

Turin University,

October 22 - October 23, Turin, Italy.

Site: <https://agenda.infn.it/event/20096/>

10/2019 Challenges and Opportunities of High Frequency Gravitational Wave Detection

ICTP,

October 14 - October 16, Trieste, Italy.

Site: <http://indico.ictp.it/event/9006/>

06/2019 StringPheno19 - String Phenomenology 2019

CERN,

June 24 - June 28, Geneva, Switzerland.

Site: <https://indico.cern.ch/event/782251/>

Talk: Geometrical destabilisation in string inflation

06/2019 Inflation and Geometry

IAP Paris,

June 11 - June 13, Paris, France.

Site: <http://sites.google.com/view/inflation-geometry-2019/home>

Talk: Geometrical destabilisation of light fields in string inflation

06/2019 Planck 2019

Parque de las Ciencias,

June 03 - June 07, Granada, Spain.

Site: <http://cafpe.ugr.es/planck2019/>

04/2019 Leiden Spring 2019

Institute Lorentz,

April 05, Leiden, Holland.

Site: http://cosmology.nl/?tribe_events=leiden-spring-2019

Talk: Geometrical destabilisation of light fields in string inflation

07/2018 StringPheno18 - String Phenomenology 2018

Faculty of Physics, University of Warsaw,

July 02 - July 06, GGI, Warsaw, Poland.

Site: <http://sp18.fuw.edu.pl/>

Talk: Chiral Global Embedding of Fibre Inflation Models - [file link](#)

01/2018 GGI Lectures on the Theory of Fundamental Interactions 2017

GGI - Galileo Galilei Institute for Theoretical Physics, INFN

January 09 - January 27, GGI, Arcetri , Italy.

12/2017 LACES 2017 - Lezioni Avanzate di Campi e Stringhe

GGI - Galileo Galilei Institute for Theoretical Physics, INFN

November 27 - December 15, GGI, Arcetri , Italy.

09/2017 Post-Inflationary String Cosmology

INFN, Alma Mater Studiorum and University of Liverpool

September 18-21, Bologna , Italy.

09/2017 TFI 2017 - Theories of the Fundamental Interactions

INFN Networks GAST, GSS and ST&FI

September 11-13, Parma , Italy.

06/2017 String Theory & Cosmology

Gordon Research Conference

May 28 - June 02, Barga, Lucca, Italy.

Skills

Computer Skills Python, Wolfram Mathematica, Tensorflow, Matlab, C++, Fortran

Foreign Language Skills **English:** Fluent (C1)

Teaching Experience

a.y. 2022/2023 Master thesis co-supervisor

University of Modena and Reggio Emilia

Student: Valentina Mosti (Math), Chiara Canali (Math), Mattia Billa (CS),
Matteo Botti (Math)

Expected graduation: March 2023

a.y. 2021/2022 Bachelor thesis co-supervisor

University of Modena and Reggio Emilia

Student: Angelo Terzi

Thesis: Regolarizzazione di multi-objective symbolic regression per la definizione di indici.

10/2022 - 10/2022 Teacher's assistant/Lecture's co-author

Bologna Business School

Course: Real-world data mining

[Link to the Python tutorial](#).

10/2018 - 09/2019 General Physics Tutor

Alma Mater Studiorum, University of Bologna

Course: General Physics (Module 1)

Bachelor in Mathematics

a.y. 2017/2018 Master thesis co-supervisor

Alma Mater Studiorum, University of Bologna

Student: Nicole Righi

Thesis: [Fuzzy Dark Matter from String Axions](#)

Professional Membership

2016-2021 Affiliation to I.N.F.N. (Istituto Nazionale di Fisica Nucleare)

What is stated in this curriculum vitae is true in accordance with articles 46 and 47 of the Italian Presidential Decree (D.P.R.) 445/2000.

In compliance with the Italian legislative Decree no. 196 dated 30/06/2003, I hereby authorize you to use and process my personal details contained in this document.

Modena, 04/11/2023