PERSONAL INFORMATION	STEFANO GIAGU

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Nationality Italian

h-index: 199 total citations: 228785 (source: Google Scholar)

Enterprise	University	EPR
☐ Management Level	☒ Full professor	☐ Research Director and 1st level Technologist / First Researcher and 2nd level Technologist
☐ Mid-Management Level	☐ Associate Professor	☐ Level III Researcher and Technologist
☐ Employee / worker level	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator	☐ Researcher and Technologist of IV, V, VI and VII level / Technical collaborator

WORK EXPERIENCE

2022 - present	**FULL PROFESSOR (PROFESSORE ORDINARIO)** Department of Physics, Sapienza Università di Roma ■ Research topics: particle physics, data analysis, computational physics, applied physics, machine learning, quantum machine learning
2011 - 2022	**ASSOCIATE PROFESSOR (PROFESSORE ASSOCIATO)** Department of Physics, Sapienza Università di Roma ■ Research topics: particle physics, data analysis, computational physics, applied physics, machine learning, quantum machine learning
2009 – 2011	**ASSISTANT PROFESSOR (RICERCATORE)** Department of Physics, Sapienza Università di Roma ■ Research topics: particle physics, data analysis, machine learning
2001 – 2004	**VISITING SCIENTIST** Fermi National Accelerator Laboratory, Batavia, IL, USA Research topics: particle physics, machine learning
1997 – 1999	**POST-DOCTORAL FELLOW** Istituto Nazionale Fisica Nucleare, Roma Research topics: particle physics, data analysis, machine learning
1993 – 1994	**POST-MSc FELLOW** Istituto Nazionale Fisica Nucleare, Roma Research topics: particle physics, data analysis, machine learning

EDUCATION AND TRAINING

1997	Ph.D in Physics	
	Sapienza Università di Roma, Italy	
	■ Supersymmetry phenomenology and searches at LEP collider, Kernel based ML Classifiers	
1992	M.Sc. (Laurea) in Physics	
	Sapienza Università di Roma, Italy	
	■ Single Photon Physics at LEP collider, 110/110 magna cum laude	

PROJECTS (last five years)

	With leadership roles
June 2019 - present	National Coordinator (PI) of the ATLAS Experiment Italy Collaboration (a community of 400 active members and a budget of 3 MEuro/year)
Feb 2021 - Feb 2024	Multi-disciplinary Use Cases for Convergent new Approaches to AI explainability, CHIST-ERA IV European grant (International PI, 1.0M Euros)
2020 - Dec 2023	A Scalable Artificial Intelligence system for Machine and Deep Learning Research and Training as Sapienza Università di Roma, Sapienza Grandi Attrezzature, (PI, 300k Euro)
October 2020 - present	Neuro Brain Platform, POR Lazio (PI Sapienza unit, 452k Euro)
	Project reviewer
2020	Reviewer FISR 2020 grants
2018-2019	Referee Marie Curie fellowship
2017	Referee Young Researcher INFN program “Rita Levi Montalcini”
2018-2019	Reviewer high energy physics grants for National Science Center, Poland
2014-current	Project reviewer for INFN Commissione Nazionale 1 of experiments PADME, KLOE-2, Belle-II

COMMUNITY SERVICE (last 5y)

TPC chair	INFN Sezione di Roma Retreat workshop 2022 TPC chair (Assisi, June 2022)
Virtual Conference Chair	ATLAS Italy Young Physics Workshop chair (Online, Sep. 2021)
Workshop co-chair	Long Lived Particles at LHC Workshop co-chair (CERN, CH, April 2017)
Workshop co-chair	ATLAS Exotic Workshop in Rome chair (Rome, IT, May 2018)
TPC member	Symposium for the 100 years since the birth of Bruno Touschek, at Sapienza, Laboratori Nazionali Frascati, and Accademia dei Lincei (Rome, IT, Dec 2021)
Regular reviewer	Elsevier Pattern Recognition Journal, European Physical Journal C, Journal of Instrumentation, Nuovo Cimento, MDPI, Journal of High Energy Physics

EDITORIAL ACTIVITY

2020 - Present	MDPI Particles Journal (editorial board member)
2019-Present	Elsevier Pattern Recognition (reviewer)
2016-Present	European Physical Journal C – Springer (reviewer)
2021-Present	Journal of High Energy Physics – Springer (reviewer)
2013 - 2015	Member of the ATLAS Collaboration Publication Committee: supervision of all the publications of the ATLAS experiment (~2900 authors)
2010	Editorial Board member for the IFAE 2010 SIF Nuovo Cimento

PHD SUPERVISION

2003-Present	Supervisor of 20 PhD student thesis in high energy physics, applied physics, quantum computing, machine learning. The most recent and ongoing ones are:
2022 - Present	Dr. G. Grillo, Multi-disciplinary Use Cases for Convergent new Approaches to AI explainability, (Roma Dottorato Nazionale AI, Campus Biomedico)
2022 - Present	Dr. S. Bordoni, Quantum computers as AI accelerators for quantum machine learning algorithms (Roma, PhD Physics Sapienza)
2022 - Present	Dr. G. Russo, Anomaly detection for New Physics searches at the HLC and upgrade of the L0 muon trigger for HL-LHC (Roma, PhD Physics Sapienza)
2022-Present	Dr. T. Torda, Interpretability and explainability IA in advanced Neural Networks for Topological Quantum Field Theory, Neuroscience and Medical Application (Roma, PhD Physics Sapienza)
2021 - Present	Dr. G. Padovano, Standard Model precision physics with tau leptons with the ATLAS experiment at the LHC (Roma, PhD Physics Sapienza)
2021 - Present	Dr. E. Pompa Pacchi, Dark sector searches in final states with long-lived or prompt neutral particles with the ATLAS detector and upgrade of the L0 muon trigger for HL-LHC (Roma, PhD Physics Sapienza)
2021 - Present	Dr. F. Morodei, Z to tau-tau differential cross-section measurement with the ATLAS experiment and upgrade of the L0 muon trigger for HL-LHC (Roma, PhD in Physics Sapienza)

TEACHING

2021 - Present	Advanced Machine Learning for Physics (Master/laurea magistrale in Physics, Sapienza)
2019 - Present	Metodi di Intelligenza Artificiale e Machine Learning in Fisica (Bachelor/laurea in Physics, Sapienza)
2019-Present	Detectors and Accelerators in Particle Physics (Master/laurea magistrale in Physics, Sapienza)
2015-Present	Artificial Intelligence and Machine Learning (PhD in Physics, Sapienza and Roma3)
2011-2019	Electromagnetism (Bachelor/laurea in Physics, Sapienza)

INSTITUTIONAL RESPONSIBILITIES

2012 - Present	Board of the National Doctorate Program in Physics, University of Siena, Italy
2018 - Present	Member of the Committee Centro InfoSapienza, Sapienza, Rome, Italy
2014-2016	Member of the Giunta Facoltà Scienze Matematiche, Fisiche e Naturali, Sapienza, Italy
2019 - Present	National Coordinator (PI) of the ATLAS Experiment Italy Collaboration (a community of 400 active members and a budget of 3 MEuro/year)
2019 - Present	Local Responsible for the INFN CSN5 group ML_INFN: for the development of an end-to-end approach to the use of Machine Learning for INFN research lines
2016 - 2019	Coordinator Sezione Roma for the INFN National Commission 1 (HEP) (a community of 120 researchers and technicians)
2017 - 2018	Member of the Management Board of the DarkSide-20k experiment at LNGS (Italy)
2017 - 2018	Coordinator of the Software and Science Simulation group of the DarkSide-20k experiment: ~20 researchers
2015 - 2017	Coordinator of the Unconventional and exotic Higgs decays physics group of the ATLAS experiment at CERN: ~150 researchers
2010 - 2012	Physics Coordinator of the ATLAS Experiment Italy collaboration (400 researchers)
2005 – 2007	Physics Coordinator of the CDF-II Experiment B-Physics group at Fermilab (150 researchers)

INVITED TALKS

1992 - Present	45 invited talks as international conferences, most recent ones:
Dec 2021	Artificial Neural Networks, principles and common architectures, Invited Seminar at the 2nd ML_INFN Hackathon (Online)
Nov 2021	AI-aided tau Identification and reconstruction in the dual-readaout calorimeter of IDEA, invited talk at the International workshop on the high energy Circular Electron-Positron Collider (Nanjing, CN)
Aug 2021	Searches for BSM physics using challenging and long-lived signatures with the ATLAS detector, talk at SUSY 2021 (Online)
July 2021	Model Compression and Simplification Pipelines for fast Deep Neural Network inference in FPGAs in HEP, Offshell 2021 (Online)
Nov 2020	Tau Identification in the dual-readaout calorimeter, invited talk at 4th FCC Physics and Experiment Workshop (online)
June 2021	Principles of Artificial Neural Networks, Invited Seminar at the 1st ML_INFN Hackathon (Online)
Sep. 2019	ATLAS results overview with focus on Dark Matter, invited talk at Dark Matter and Weak Interaction Conference DARKWIN 2019 (natal, BR)
Nov 2019	Fast and resource-efficient Deep NN on FPGAs for the Phase-II L0 Muon Barrel Trigger of the ATLAS Experiment, 24th International Conference on Computing in High Energy and Nuclear Physics (CHEP2019) (Adelaide, AU)

FELLOWSHIPS AND AWARDS

2020	Award for “Excellent Teaching” 2018-2019 from the department of Natural, Mathematics and Physics Sciences at Sapienza Università di Roma (first classified in the Faculty of Science)
2017	Award for “Excellent Teaching” 2016-2017 from the department of Natural, Mathematics and Physics Sciences at Sapienza Università di Roma
2015-Present	Società Italiana di Fisica Fellow
2013	Awarded as part of the ATLAS and CMS Collaborations with the EPS 2013 High Energy and Particle Physics Prize for an outstanding contribution to High Energy Physics (discovery of the Higgs boson)

RESEARCH ACTIVITIES

Tutoring and Supervising	Supervisor of 20 PhD student thesis in Physics Supervisor of 57 Master-degree student thesis in Physics and Artificial Intelligence Supervisor of more than 60 Bachelor-degree thesis in Physics

Summary of Scientific Achievements	My scientific activity since 1989 has been focused in the experimental investigation of the nature of the fundamental interaction, and developed mainly through the participation to the design and running of the experiments L3 at the LEP e+e- collider (1989-2000), CDF at the Tevatron p-pbar collider (1999-2012), ATLAS at the LHC pp collider (2006-today), DarkSide experiment at the LNGS laboratory of INFN (2014-2018), and to the study for experiments at future colliders (FCCee and the IDEA detector concept). In synergy with this activity since the mid-90s I have also strongly contributed to both the experimental application and the foundational development of modern Machine Learning, Deep Learning and Artificial Intelligence methods, in several research contexts (high-energy physics, astroparticle physics, condensed matter and statistical physics, applications in medicine and medical imaging, quantum computing and quantum machine learning). In my research work I have contributed substantially and in first person to three of the most important results in physics of the last 20 years: the discovery of the Higgs boson at LHC (2011-12), to the first observation of the mixing of the Bs meson at Tevatron (first half of years 2000), and to the precise determination of the number of light neutrino families at LEP (years 1990-1995). I'm author of more than 1700 scientific papers published in peer reviewed international journals (1758 refereed papers, database Scopus, December 26th, 2021). I have been among the main authors and substantially contributed to the results and the writing of the paper for more than 100 of these publications, and for a similar number I have heavily contributed at the reported results with physics studies or by the development of analysis tools extensively used in the results.

PUBLICATIONS

Publications best and most relevant in the last 10 years	1. Model compression and simplification pipelines for fast deep neural network inference in FPGAs in HEP S. Francescato, S. Giagu, F. Riti, G. Russo, L. Sabetta, F. Tortonesi, Eur. Phys. J. C 81, 969 (2021) 2. Search for light long-lived neutral particles produced in pp collisions at root s=13 TeV and decaying into collimated leptons or light hadrons with the ATLAS detector HEP S. Giagu (ATLAS Collaboration), Eur. Phys. J. C (2020) 80: 450 3. WIMP Dark Matter Searches with the ATLAS Detector at the LHC, S. Giagu, Front. Phys. 7:75 (2019) 4. AtlFast3: the next generation of fast simulation in ATLAS, S Giagu et al. (ATLAS Coll.), Computing and Software for Big Science, Springer (2021); 5. Preliminary results in using Deep Learning to emulate BLOB, a nuclear interaction model, A. Ciardiello, M. Asai, B. Caccia, et al., Phys.Medica 73 (2020) 65-72 (2020) 6. A neural network clustering algorithm for the ATLAS silicon pixel detector, S. Giagu et al (ATLAS Collaboration), Journal of Instrumentation vol. 9 (2014) 7. Observation of a new particle in the search for the Standard Model Higgs boson with the ATLAS detector at the LHC, S. Giagu et al (ATLAS Collaboration), Physics Letter B 716 (1) , pp.1-29, and Science 338 (2012) 1576-1582 8. Evidence for the spin-0 nature of the Higgs boson using ATLAS data, ATLAS Collaboration, Phys. Lett. B 726 (2013) 120, arXiv:1307.1432 [hep-ex] 9. Search for the Higgs Boson Using Neural Networks in Events with MET and b-Quark Jets in p-pbar Collisions at root s=1.96 TeV, S. Giagu et al (CDF Collaboration), Phys.Rev.Lett, vol. 104 (2010) 10. Performance of the ATLAS Trigger System in 2010, S. Giagu et al (ATLAS Collaboration), Eurpean Physical Journal C 72 (1)

According to law 679/2016 of the Regulation of the European Parliament of 27th April 2016, I hereby express my consent to process and use my data provided in this CV.