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Education Ph.D. in Physics, Università di Perugia **Jul. 1998**
B.Sc. (*summa cum laude*) in Physics, Università di Perugia **Nov. 1993**

Research Interests *Gravitational wave detection:* research on mechanical and optical properties of interference optical coatings, thermal noise investigation in laser interferometric detectors, development of fused silica and sapphire suspensions in advanced and future detectors, design of third generation GW detectors.
Materials research: mechanical loss measurements in low loss materials at room and low temperature, thermal expansion and thermal conductivity measurements, mechanical properties of dielectric coatings. Structure and relaxations in glasses.

Research Experience **Professor of Physics** **since Sept.2015**
Université Claude Bernard Lyon 1

Projects: I contribute to the research activity of two groups, Soprano and Luminescence, at the **Institut Lumière Matière**, CNRS UMR5306. In the Soprano group I investigate the nature and the dynamics of the relaxation mechanisms in oxide glasses. In the Luminescence group I develop the technology of sapphire as material for the test masses in future Gravitational Waves detectors. I have created a group of 8 members called **g-MAG** (Matériaux pour l'Astronomie Gravitationnelle) that is in the probationary period as Virgo group. I am the coordinator of the Virgo subsystem called Virgo Coating R&D collaboration. **VCR&D** has been created on January 2017 and now it counts 10 Virgo laboratories that aim to develop new low noise coatings. I am the PI of the ANR project ViSIONs dedicated to the study of the physics of coating deposition. In September 2019 the project **OSAG** (Optiques en Saphir pour l'Astronomie Gravitationnelle) has been approved for funding by the IDEXLYON in the context of the Scientific Breakthrough Program 2019. In december 2019 the VCR&D collaboration had approved a project called **CRD** (Coating R&D) to develop coatings for Advanced Virgo +.

Achievements: collaboration between LMA and the Institut Lumière Matière on glass relaxations and sapphire. Creation of the VCR&D collaboration and of the Virgo group g-MAG. Projects approved: ViSIONs, OSAG, CRD.

Director of LMA **Jan.2016 - Mar.2018**

Projects: I continue to be the scientific responsible of the Laboratoire des Matériaux Avancés - CNRS USR3264. The scientific axes of LMA are: 1) Gravitational Waves; 2) Astronomical Instrumentation; 3) Fundamental physics. The laboratory is member of the collaborations Virgo, LSST-France, the project Biréfringence Magnétique du Vide, le projet ExSqueeze (on frequency dependent squeezed light). The priorities of LMA are: a) the development of low-noise new materials for GW detectors; b) the developments of the coaters for the next generation of GW detectors; c) the development of the coaters and metrology for the astronomical instrumentation.

Achievements: First detection of Gravitational Waves; development and delivery of Advanced LIGO and Advanced Virgo coatings; development of the activity on Astronomical Instrumentation; development of the **first optical in-situ control of coating deposition at LMA.**

Researcher **Jan.2015 - Aug. 2015**

Laboratoire des Matériaux Avancés - CNRS
Université Claude Bernard Lyon 1

Projects: in continuity with the previous period I have investigated the correlations between structural properties and mechanical losses in optical films.

- Invited Professor (LABEX LIO)** **Jan.2012 - Dec.2014**
Laboratoire des Matériaux Avancés - CNRS
Université de Lyon
Projects: optimal parameters selection for the deposition of coatings on Advanced Virgo and LIGO detectors. Correlations between structural properties and opto-mechanical parameters in dielectric coatings (project POEMA), development of in-situ metrology for ion-beam-sputtering coater. Coating design and metrology development for the LSST filters. Development of the etalon cavity pathfinder for the Visible Tunable Filter for the Daniel K. Inouye Solar Telescope. Enhancement of throughput in the integral field spectrometer HARMONI. Development of high-finesse and low mechanical loss micro-cavities for MINOTORE.
Achievements: development of the single point suspension system (GeNS) for mechanical characterization of materials at cryogenic temperatures; **reduction of the ripple amplitude** in the Advanced Detectors optics.
- Assistant Professor** **Sept.2010 - Dec.2011**
Physics & Astronomy Department, University of Texas at Brownsville
Projects: measurement of creep rate on hydroxide-catalysis bonding.
Achievements: development of the quadrature phase interferometer.
- Associated Researcher** **Jul.2007 - Aug.2010**
Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Gruppo Virgo.
Projects: Coating Characterization (CoaCh): coating characterization for advanced and third generation detectors; **fused silica suspension for Advanced Virgo**.
- Primo Ricercatore** **Jan.2006 - Jun.2007**
Istituto Nazionale di Fisica Nucleare, Sezione di Firenze, Gruppo Virgo.
Projects: development of a new nodal suspension for mechanical loss measurements (GeNS); cryogenic measurements of thermal conductivity on bonded silicon samples; set-up of an optical cavity for thermal expansion measurements at low temperature; coating characterization project designing; mechanical loss measurements on silicon rods.
Achievements: development of the single point suspension system (**GeNS**) for mechanical characterization of coatings.
- Visiting Researcher** **Jun.2004 - Dec.2004**
Physics and Astronomy Department, Arcetri, Firenze, Italy.
Achievements: mechanical loss measurements on silicon fibres.
- Lecturer** **Oct.2000 - Jun.2007**
Physics and Astronomy Department, University of Glasgow, UK.
Projects: equipping of the cryogenic lab for mechanical loss measurements; coordination of the European Project STREGA on thermal noise reduction for third generation detectors; suspension design and thermal noise reduction strategy for the Advanced LIGO detector.
Achievements: development of a **CO₂ laser pulling machine** for fused silica fibres; **cancellation the thermoelastic damping** in silica fibres.
- Research Assistant** **Oct.1998 - Sep.2000**
Physics and Astronomy Department, University of Glasgow, UK.
Supervisor: Prof. James Hough, FRS
Achievements: development and installation of the **first fused silica suspension ever** for the GEO600 detector.
- Post-doc position** **Aug.1998 - Mar.1999**
Virgo Laboratory, Physics Department, University of Perugia, Italy.

Doctoral Candidate **1995 - Jul.1998**
 Virgo Laboratory, Physics Department, University of Perugia, Italy.
 Supervisor: Dr. Luca Gammaitoni
Thesis: Thermal Noise Limits in the Detection of Gravitational Waves: Last Stage Suspensions in the Virgo Project.

Bachelor's Degree Candidate **1992 - Nov.1993**
 Virgo Laboratory, Physics Department, University of Perugia, Italy.
 Supervisor: Prof. Sergio Santucci
Thesis: Device for the Internal Friction Measurement in Forced Mechanical Pendulums.

Scientific Collaborations	PI, CRD - Advanced Virgo +	since December 2019
	PI, OSAG - IDEXLYON	since September 2019
	PI, ViSIONs - ANR	since January 2019
	COORDINATOR, VCR&D	since January 2017
	MEMBER, ExSqueez - ANR	2015 - 2017
	NATIONAL RESPONSIBLE, JSPS, collaboration Europe-Japan	2015 - 2018
	MEMBER, Biréfringence Magnetique du Vide - ANR	2014 - 2017
	NATIONAL RESPONSIBLE, ELiTES, Marie Curie Action, Europe-Japan	2014 - 2016
	MEMBER, LSST France - IN2P3	2012 - 2018
	MEMBER, MiNOToRe - ANR	2012 - 2015
	MEMBER, LIGO Scientific Community	2010 - 2012
	MEMBER, CoaCh	2008 - 2011
	COORDINATOR, STREGA	2003 - 2007
MEMBER, GEO600	1999 - 2007	
MEMBER, Virgo	1992 - 2000 and 2006 - present	

Scientific Activities	GROUP HEAD, Virgo group g-MAG	since March 2019
	MEMBER, GWIC 3G R&D	since Jul. 2017
	MEMBER, Scientific Committee if ICIFMS	since Jul. 2017
	MEMBER, Scientific Advisory Committee - GWADW	2014 - 2018
	ORGANIZER, 6 th Einstein Telescope Symposium, Lyon, France	Nov. 2014
	CHAIR, 'Mitigating thermal noise' - GWADW, Takayama, Japan	Mai 2014
	MEMBER, Direction Committee at LMA	since 2013
	RESPONSIBLE, R&D activity at LMA	since 2013
	MEMBER, Virgo Steering Committee	since June 2013
	GROUP HEAD, Virgo-LMA	since June 2013
	COORDINATOR, STREGA	2003 - 2007
	MEMBER ILIAS Executive Board	2003 - 2007
	PROJECT SCIENTIST, ILIAS	2006 - 2007
	MEMBER, ILIAS-Next proposal drafting group	2006 - 2007
	REFEREE <i>Classical and Quantum Gravity; Physics Letters A; Review of Scientific Instruments</i>	

Invited Colloquia Seminars & Workshops	SEMINAR	Development of mirrors for GW Detectors	Roma La Sapienza, Mar. 2018
	PRESENTATION	Internal friction of glasses used in GW Detectors	ICIFMS-18, Jul. 2017
	PRESENTATION	Coatings for 3 rd GW Detectors	APPEC Hannover, May 2016
	PRESENTATION	Low noise glasses for GW Astronomy	JMC15 Bordeaux, Aug. 2016
	PRESENTATION	Thermal noises in GW detectors	UPoN Barcelona, Jul. 2015
	SEMINAR	Modern Coatings for future GW detectors	FSU-Jena, Jan. 2015
	PRESENTATION	Th.Ns. reduction for future GW detectors	GWADW Takayama, Mai 2014
	PRESENTATION	Optical coatings for future detectors	ELiTES-Tokyo, Nov. 2013
	SEMINAR	Research lines at LMA	ILM-Lyon, Oct. 2013
	SEMINAR	Thermal noise in GW Detectors	FEMTO-ST-Besancon, Oct. 2013
	SEMINAR	Material research in GW Detectors	U. Lyon1, Oct. 2012
	COLLOQUIUM	Silica suspensions in Ad. Detectors	LIGO-Hanford, Feb. 2011
	SEMINAR	Detection of GW and Thermal Noise	PH.D. school, Trento, Jul. 2006
	COLLOQUIUM	Experimental Search for GW	ETH, Jun. 2006
	PRESENTATION	ILIAS and FP7 Prospective	INFN Comm.II-Roma, May 2006
	PRESENTATION	ILIAS and FP7 Prospective	RADIONET-Volterra, Apr. 2006
	COLLOQUIUM	Present and Future of GW Detectors	University, Padova, Feb. 2006
PRESENTATION	Noise Reduction in GW Detectors	EAP Meeting-Munich, Nov. 2005	
PRESENTATION	Presentation of ILIAS	JENAM Meeting-Liege, Jul. 2005	
PRESENTATION	The 3 rd Generation GW Detectors,	FP7 Meeting, Munich May 2005	
Teaching		'Introduction à la Physique des OG', 2 nd year Physics Master, ENS-Lyon	since 2019
		'Physique des Capteurs', 1 st year Physics Master, UCBL	since 2016
		'Optical Interference Coatings', 2 nd year Master DIMN, UCBL	since 2013
		'Solid State Physics", Travaux Diriges 1 st year Physics Master, UCBL1	since 2012
		'Physics of Liquids", Travaux Diriges 3 rd year Physics, UCBL1	since 2012
		'University Physics I", 1 st year Physics and Engineering Physics, UTB	2011
		'Laboratory UP I", 1 st year Physics and Engineering Physics, UTB	2011
		'Modern Physics", 3 rd year Physics and Engineering Physics, UTB	2011
		Classical and Modern Physics, Secondary School, Italy	2007 - 2009
		1 st year Astronomy Laboratory demonstration and supervision, Glasgow	2005
		"Oscillations", 1 st year EE Engineering, Glasgow	2003
		"Circuits and Systems", 3 rd year Physics, Glasgow	2003
		"Optical and Radio Astronomy", 4 th year Astronomy, Glasgow	2002, 2004
		"The Galaxy II", 4 th year Astronomy, Glasgow	2001, 2003, 2005
		"Mapping the Universe", 1 st year Science, Glasgow	2000 - 2005
		"Electricity and Electronics", 1 st year Physics, Glasgow	2000 - 2005
		3 rd year Physics Laboratory demonstration, Glasgow	2000 - 2001
	1 st year Physics Laboratory demonstration and supervision, Glasgow	1998 - 1999	
	Large group tutoring, 1 st year Physics, Glasgow	2000, 2002	
	Small group tutoring, 2 nd year Physics, Glasgow	2000 - 2005	
Teaching Activities and Titles		Teaching qualification as University Professor, section 30, CNU France,	Jan. 2014
		Member of the Instructional Laboratory Committee, UTB Brownsville,	Aug.2011 - Dec.2011
		Member of the Recruitment Committee, UTB Brownsville,	Sep.2010 - Dec.2011
		Responsible of the 1 st year Astronomy Laboratory, University of Glasgow,	2005
		Member of the Teaching Committee, University of Glasgow,	Oct.2004 - Jan.2006
		Member of the Faculty Workshop Committee, University of Glasgow,	Oct.2003 - Sep.2004
		Member of the Recruitment Committee, University of Glasgow,	Oct.2001 - Sep.2004
		Responsible of the 1 st year Engineering Laboratory, University of Glasgow,	2001 - 2005
	UK Teaching qualification granted, University of Glasgow	Aug. 2003	
	Attendance to the New Lecturer Program at the University of Glasgow	2000 - 2003	

Public Outreach	THE DISCOVERY OF GW	Città di Castello Apr. 2016
	THE SOUND OF UNIVERSE	Città di Castello Oct. 2009
	LIGHT AND ITS NATURE	Montone's Light Festival Jul. 2009
	RENEWABLE ENERGIES AND THE ENVIRONMENT	S.Giustino May 2009
	TIME IN PHYSICS	Città di Castello Mar. 2009
	Science show with demonstrations	Città di Castello Oct. 2008
	FROM SHOOTING STARS TO COSMOLOGY	Città di Castello Aug. 2008
	HOW SCIENTISTS OBSERVE THE NATURE	S.Giustino Dec. 2007

Funded Grants	"CRD: Coating R&D for Advanced Virgo +" Coordinator EGO-Virgo	2020-2021
	"OSAG: Sapphire Optics for Gravitational Astronomy" Principal Investigator IDEXLYON	2020 - 2022
	"ViSIONs: Vibrations and loss in amorphous optical coatings" Principal Investigator ANR-CNRS	2019 - 2022
	"Advanced Virgo: subsystems Mirrors and Optical Symulation and Design" Director of LMA and Head of the Virgo Group EGO	Running Grant
	"Measurement of creep in hydroxide catalysis bonding" P.I. for University of Texas at Bronswille CREST supplement, NSF	2011 - 2012
	"Thermal Noise Reduction for 3 rd Generation GW Detector" P.I. for University of Glasgow European Project ILIAS, Contract N. RII3-CT-2004-506222	2004 - 2008
	"Development of a CO ₂ laser machine to fabricate and weld Silica fibres" P.I., European Gravitational Observatory (EGO) Fund, Ref. N. EGO-DIR-143/2003	2004 - 2005
	PPARC Rolling Programme for the Institute for Gravitational Research, Glasgow Co.I.	2003 - 2007

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