PERSONAL INFORMATION

Antonio Ferraro

21, Via Leopoldo Micucci, Rome, 00173, ITALY

+39 3477739071

antonio.ferraro@unical.it; anto.ferraro14@gmail.com; anto.ferraro@arubapec.it

Skype: antonio.ferraro14

http://fis.unical.it/nanolase

Sex Male | Date of birth 28/03/1987 | Nationality Italian

Science and Technology field

Physical and Material Science, Photonic, Optics, Nanotechnology

Research Fields – Key Words

Nanostructured materials, Metamaterial Devices, Terahertz devices, Liquid Crystals (LC), LC composite devices fabrication and characterization, Clean Room fabrication, 3D printing

WORK EXPERIENCE

2019-06-01 to Present

Research Fellow

Dipartimento di Fisica, Università della Calabria, Via Ponte Pietro Bucci cubo 33b, 87036 Rende (CS), Italy

http://fis.unical.it/nanolase/

- Design, fabbrication and characterization of metamaterial devices

Business or sector Public University

2014-02-13 to 2019-05-31

Research Fellow

Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM) –100, Via del fosso del cavaliere, 00133 Rome (Italy)

https://www.imm.cnr.it/

- Design, clean room fabbrication and characterization of metamaterial devices tunable by liquid crystals for Terahertz and Microwave applications

Business or sector Public Research Institution

2012-09-17 to 2014-02-12

Research Fellow

Consiglio Nazionale delle Ricerche – Istituto per la Tecnologia delle Membrane (CNR-ITM) - Via P. Bucci cubo 17/C c/o Università della Calabria, 87036 Rende (CS) (Italy)

https://www.itm.cnr.it/

- Fabrication and characterization of polymer membranes for gas separation

Business or sector Public Research Institution

2015-09-06 to 2015-09-25

Research Visiting

Terahertz Imaging Advances Labs research group" University of Sussex, Falmer (Regno Unito)

http://www.sussex.ac.uk/physics/epic/

- Experimental characterization by means of Terahertz radiation of metamaterials previously fabbricated by myself

Business or sector Public University

2011-05-01 to 2011-10-31

Internship

Philips Research Europe – High Tech Campus, Eindhoven, (The Netherland)

- Realization and optical characterization of nanostructured devices containing photoluminescent material

Business or sector Private Industrial Research

AWARDS

Marzo 2019

Best Doctoral Thesis Award in Optoelectronics 2018" dalla IEEE Photonics Society Italian Chapter

EDUCATION AND TRAINING

February 2014 – May 2017

Doctoral Degree in Physical, Chemical and Materials Sciences and Technologies

EQF 8; ISCED (2001) 8

Dipartimento di Fisica, Università della Calabria, Italy

- Dissertation tile: *"From basic to advanced: design, fabrication and characterization of functional Terahertz devices".*

Professional Technology:
- Material Science
- Photonics
- Modelling, design, fabrication in clean room and experimental characterization of novel liquid crystal metamaterial devices for Terahertz applications.
- Knowledge and use of different clean room equipment for microfabrication and characterization

2015-12-18

Training Course

Consiglio Nazionale delle Ricerche – Servizio di Prevenzione e Protezione

Prevention in the workplace - General knowledge:
- General concepts: danger, risk, damage, prevention and protection
- D. LGS. 81/08: Figures and Tasks
- Fire emergency
- First Aid Elements
- Working with video terminals

2015-04-12 to 2015-04-25

Workshop

Workshop inside project "Bando Vinci 2013

Université de Technologie de Troyes, Troyes, Francia

- Plasmonics and Nanofabrication

2014-09-29 to 2014-10-03

Doctoral School

Université Catholique de Louvain (UCL), Louvain La Neuve, Belgio

- European School of Antenna (ESoA) Course: Arrays and Reflector Arrays

2014-05-26 to 2014-05-30

Training Course

COMSOL Multiphysics Italy

Course Location: Area della Ricerca di Tor Vergata (ARTOV) - CNR, Rome, Italy

- Introduction to COMSOL Multiphycis (8 h)
- CAD & Meshing with COMSOL Multiphycis (8 h)

- Optimization with COMSOL Multiphycis (8 h)
- Electromagnetic Modeling with COMSOL Multiphycis (8 h)
- CFD with COMSOL Multiphycis (8 h)

October 2009 – July 2012

Master Degree *cum laude* in Science and Engineering of Innovative and Functional Materials

EQF 7; ISCED (2001) 7

Dipartimento di Fisica, Università della Calabria, Italy

- Dissertation title: *"Realization and Characterization of Luminescent Nanostructured Materials"* made in the laboratories of Philips Research Europe, Eindhoven, Netherlands.

Professional Technology:
- Physical and chemical principles applied to the study of innovative materials such as polymers, membrane, macromolecular structures, mesoporous materials and luminescent materials for solar applications
- Knowledge and use of different analysis and characterization techniques.
- Science of Innovative Materials (polymers, liquid crystals, luminescent materials)
- Photonics
- Optics

October 2006 – December 2009

Bachelor Degree in Materials Science

EQF 6; ISCED (2001) 6

Dipartimento di Fisica, Università della Calabria, Italy

Bachelor degree in Materials Science with a grade of 106/110
Dissertation title: " *Realizzazione e caratterizzazione di strutture periodiche tramite tecniche olografiche nel visibile"*

Professional Technology:
- Physical and chemical principles applied to the study of innovative materials such as polymers and liquid crystals.
- Knowledge and use of different analysis techniques also through the assembly of optical setup for use with lasers of different wavelengths
- Optics

PERSONAL SKILLS

Mother tongue(s): Italian

Other language(s)

	UNDERSTANDING		SPEAKING		WRITING
	Listening	Reading	Spoken interaction	Spoken production	
English	B2	B2	B2	B2	B2
	First Certificate in English, University of Cambridge -Level: B2. April 2012				

Levels: A1/A2: Basic user - B1/B2: Independent user - C1/C2 Proficient user
Common European Framework of Reference for Languages

Communication skills

Excellent attitude to teamwork and interpersonal relationships acquired during the professional activity in different national and European contexts.
Interest in different socio-cultural contexts
Dynamism and strong personal initiative

Organisational / managerial skills

Ability to organize own work by defining priorities and objectives.
Strong organizational skills and problem solving.
Work planning
Teamwork, flexibility
Excellent ability to work in multidisciplinary and multilingual contexts gained during work experience

abroad (the Netherlands at Philips, France, Belgium).
Basic skills regarding administrative aspects related to the purchase of goods
Excellent ability to write scientific articles and project reports in English.

Job-related skills

Excellent capacity in the microfabrication of electronic devices in clean rooms and use of the following equipment:
▪ UV photolithography: laser mask writer, spin coater, mask aligner, dry resist laminator, spray etching, dip etching.
▪ Deposition of thin films: Thermal and electron gun evaporator, Sputtering, Reactive Ion Etchin (RIE)
▪ Excellent capacity for assembly / packaging of devices and antennas even with large area (e.g> 15cm) containing liquid and non-liquid crystal.
▪ Material characterization: Atomic Force Microscope (AFM), Scanning Electron Microscope (SEM), profilometer
▪ Optical characterization with lasers at different wavelengths also through the construction of setups.
▪ Characterization of devices and materials by Terahertz, FTIR and UV-Vis spectroscopy.
▪ Optical holography fabrication
▪ Wire bonding welding machine.

Research Activity

Current Research Fields

▪ Metamaterials device fabrication and characterization
▪ Optical nanomaterials: study of new nanomaterials of complex spatial profiles
▪ Manufacture of liquid crystal tuneable plasmonic devices

Recent Scientific Activity

▪ Fabrication and spectroscopic characterization of components for Terahertz (THz) applications.
▪ Fabrication and characterization of liquid crystal tuneable metamaterials.
▪ Manufacture of liquid crystal antennas operating in the microwave frequency range

Participation Research projects: in progress

▪ **"TEHRIS: Tailored Metamaterials for Extremely High-Resolution Imaging and Sensing"** 2019
Project Founded by: European Commision
Purpose of the project: Exploiting the optical properties of nano-scale metal/dielectric multi-layers Hyperbolic Metamaterials (HMMs) to enable super-resolution imaging at selectable wavelengths in the VIS-NIR range.
Coordinator: Dipartimento di Fisica, Università della Calabria.
Funding for Operating Unit: 34,000.00 €

Participation Research projects: concluded

▪ **"Low profile active scanning antenna array demonstrator"**, 2017-2019 (ESA ITT AO/1-8614/16/UK/ND)
Project Founded by: European Space Agency
Purpose of the project: Design and demonstration of an electro-optically tuneable antenna for satellite communications in the Ka band
Coordinator: Ingegneria dei Sistemi S.p.A.
Funding for Operating Unit: 256,000.00 €

▪ **"AMC/Metamaterial Antennas for Broadband Connectivity"**, 2015-2017 (ESA ITT AO/1-7992/14/NL/MH),
Project Founded by: European Space Agency
Purpose of the project: Design and demonstration of a liquid crystal tuneable metamaterial antenna for the Ku and Ka bands.
Coordinator: Ingegneria dei Sistemi S.p.A.
Funding for Operating Unit: 101,000.00 €

▪ **"THz Lenses with electro-optical tuneable focal length"**, 2014-2015,
Project Founded by: Ministry of Foreign Affairs (Italy). "Project of Great Relevance" two-year scientific collaboration with the National Institute of Scientific Research - Energy, Materials and Telecommunications, Québec, Canada.
Purpose of the project: Design, fabbrication and characterization of variable focal lenses using liquid crystals operating in the frequency range of Terahertz (THz)
Coordinator: Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM)
Funding for Operating Unit: 45,000.00 €

▪**"Functional metamaterials for spatial light modulators at THz spectrum"**, 2013-2015,
Project Founded by: Ministry of Foreign Affairs (Italy). "Three-year project of great relevance" of scientific collaboration with the Military University of Technology, Warsaw, Poland.
Purpose of the project: Design, fabrication and characterization of liquid crystal modulator for Terahertz radiation
Coordinator: Consiglio Nazionale delle Ricerche – Istituto per la Microelettronica e Microsistemi (CNR-IMM)
Funding for Operating Unit: 55,000 €

▪ **"THEIA - TeraHErtz Imaging Advances (THEIA): Looking with Terahertz Eyes"**, 2013-2015
Project Founded by: Ministry of Education, University and Research (Italy)
Purpose of the project: Development of skills and devices for the generation, detection and manipulation of electromagnetic radiation in the frequency range of Terahertz.
Coordinator: Consiglio Nazionale delle Ricerche – Istituto per i Sistemi Complessi (CNR-ISC)
Funding for Operating Unit: 34,249 €

▪ **Study and experimentation of photo conversion systems with sunlight of CO_2 in methanol, to be used as fuel -FotoriduCO2**, 01/07/2011 al 30/06/2014
Project Founded by: Ministry of Education, University and Research (Italy) through the PON program "Research and competitiveness 2007-2013
Purpose of the project: To obtain, with high yields, combustible products such as methanol from catalytic photoroduction of CO_2 by gas separation
Coordinator: Italcementi Fabbriche Riunite S.p.A.

▪ **Long-life PEM-FCH &CHP systems at temperatures ≥100°C (LoLiPEM),** 2010-2012,
Project Founded by: European Commission (FP7)
Purpose of the project: Development and experimental demonstration of new membranes for hydrogen fuel cells operating at temperatures> 100 ° C and heat cogeneration.
Coordinator: Consiglio Nazionale delle Ricerche – Istituto per la Tecnologia delle Membrane (ITM-CNR)
Funding for Operating Unit: 310,355.14 €

EVALUATION AND MONITORING OF RESEARCH SKILLS AND COMPETENCE

Referee for scientific journals:

OSA: Optics Express
EMW Publishing: Progress in Electromagnetic Research
Elsevier: Optics Communications

Digital skills

SELF-ASSESSMENT				
Information processing	Communication	Content creation	Safety	Problem solving
Proficient User	Proficient User	Independent User	Proficient User	Independent User

Levels: Basic user - Independent user - Proficient user
Digital competences - Self-assessment grid

▪ Excellent knowledge of office suite tools (word processor, spreadsheet, presentation software)
▪ Good knowledge of digital image processing programs: Adobe Illustrator
▪ Good knowledge of 2D and 3D CAD design: Autocad, Solidworks
▪ Good knowledge in the use of data analysis software: Matlab, Kaleidagraph
▪ Good knowledge of using 3D printing technology

Other skills

▪ Good manual skills in mechanical work

Driving licence

Replace with driving licence category/-ies. Example:

B

ADDITIONAL INFORMATION

Number of papers in International refereed Journals/ Conference Proceedings: **13/5** (Scopus), **14/7** (Google Scholar)
Number of citations: **65** (Google), **85** (Scopus),
Hirsch (H) index: **5**
Orcid ID: 0000-0003-0189-6729
Scopus ID: 55505049500
Researchgate: Antonio_Ferraro
ResearcherID: Q-1181-2018
Google Scholar: Antonio Ferraro

LIST OF PUBBLICATION

Peer Reviewd papers:

2019

[A14] "Toroidal metasurface resonances in microwave waveguides", *Scientific Reports,* Vol. 9, Issue 1, art. 7544, (2019)
D.C. Zografopoulos, J.F. Algorri, **A. Ferraro**, B. García-Cámara, J. M. Sánchez-Pena and R. Beccherelli
doi: 10.1038/s41598-019-44093-7
https://www.nature.com/articles/s41598-019-44093-7
WOS:
ISI:
ISSN: 2045-2322 (Printed)

[A13] "Ultrahigh-quality factor resonant dielectric metasurfaces based on hollow nanocuboids", *Optics Express,* Vol. 27, Issue 5, pp. 6320-6330, (2019)
J.F. Algorri, D.C. Zografopoulos, **A. Ferraro**, B. García-Cámara, R. Beccherelli and J. M. Sánchez-Pena
doi: 10.1364/OE.27.006320
https://www.osapublishing.org/oe/abstract.cfm?uri=oe-27-5-6320
WOS: 000460170000034
ISI: 2-s2.0-85062893421
ISSN: 10944087 (Printed)

[A12] "Electrically Tunable Metal-Semiconductor–Metal Terahertz Metasurface Modulators", *IEEE Journal of Selected Topics in Quantum Electronics*, Vol. 25, Issue 3, art. 8500108, (2019)
G. Isic, G. Sinatkas, D.C. Zografopoulos, B. Vasic, **A. Ferraro**, R. Beccherelli, E. E. Kriezis and M. Belic
doi: 10.1109/JSTQE.2019.2893762
https://ieeexplore.ieee.org/document/8616810
WOS: 000458763600001

ISI: 2-s2.0-85061739917
ISSN: 1077-260X (Printed) 1558-4542 (Online)

[A11] "Anapole modes in hollow nanocuboid dielectric metasurfaces for refractometric sensing", *Nanomaterials*, Vol. 9, Issue 1, art. 30, (2019)
J.F. Algorri, D.C. Zografopoulos, **A. Ferraro**, B. García-Cámara, R. Vergaz, R. Beccherelli and J. M. Sánchez-Pena
doi: 10.3390/nano9010030
https://www.mdpi.com/2079-4991/9/1/30
WOS: 000459737200030
ISI: 2-s2.0-85059367288
ISSN: 20794991 (Printed)

2018

[A10] "Liquid-crystal high-frequency microwave technology: Materials and characterization", *Advanced Materials Technologies*, art. 1800447, (2018)
D.C. Zografopoulos, **A. Ferraro**, and R. Beccherelli.
doi: 10.1002/admt.201800447
https://onlinelibrary.wiley.com/doi/full/10.1002/admt.201800447
WOS: 000459632800029
ISI: 2-s2.0-85058463830
ISSN: 2365-709X (Printed)

[A9] "Guided-mode resonant narrowband terahertz filtering by periodic metallic stripes and patch arrays on cyclo-olefin substrates", *Scientific Reports*, Vol. 8, Issue 1, art. 17272, (2018)
A. Ferraro, D.C. Zografopoulos, R. Caputo. and R. Beccherelli
doi: 10.1038/s41598-018-35515-z
https://www.nature.com/articles/s41598-018-35515-z#Abs1
WOS: 000450915300002
ISI:2-s2.0-85057114658
ISSN: 2045-2322 (Printed)

[A8] "Numerical and Experimental Time-Domain Characterization of Terahertz Conducting Polymers", *IEEE Photonics Technology Letters*, Vol. 30, Issue 17, pp. 1579-1582, (2018)
D.C. Zografopoulos, K. P. Prokopidis, **A. Ferraro**, L. Peters, M. Peccianti, and R. Beccherelli.
doi: 10.1109/LPT.2018.2862148
https://ieeexplore.ieee.org/document/8424162
WOS: 000442323600013
ISI: 2-s2.0-85050987889
ISSN: 1041-1135 (Printed), 1941-0174 (eISSN)

[A7] "Directional Emission of Fluorescent Dye-Doped Dielectric Nanogratings for Lighting Applications", *ACS Applied Materials and Interfaces*, Vol. 10, Issue 29, pp. 24750-24757, (2018)

A. Ferraro, D.C. Zografopoulos, M. A. Verschuuren, D.K.G De Boer, F. Kong, P.H. Urbach, R. Beccherelli, R. Caputo.
doi: 10.1021/acsami.8b08971
https://pubs.acs.org/doi/10.1021/acsami.8b08971
WOS: 000440511900048
ISI: 2-s2.0-85049686221
ISSN: 1944-8244 (Printed), 1944-8252 (Online)

2017

[A6] "Angle-resolved and polarization-dependent investigation of cross-shaped frequency-selective surface terahertz filters", *Applied Physics Letters*, Vol. 110, Issue 14. art. 141107, (2017)
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
doi: 10.1063/1.4979804
http://aip.scitation.org/doi/10.1063/1.4979804
WOS: 000399162100007
ISI: 2-s2.0-85017139790
ISSN: 0003-6951 (Online)

[A5] "Terahertz polarizing component on cyclo-olefin polymer", Photonics Letters of Poland, Vol. 9, Issue 1. pp. 2-4, (2017)
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
doi: 10.4302/plp.v9i1.699
http://photonics.pl/PLP/index.php/letters/article/view/9-2/469/
WOS: 000398814300002
ISI: 2-s2.0-85016754649
ISSN: 2080-2242 (Online)

[A4] "Broad- and narrow-line terahertz filtering in frequency-selective surfaces patterned on thin low-loss polymer substrates", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 23, Issue 4. art. 8501308, (2017)
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
doi: 10.1109/JSTQE.2017.2665641
http://ieeexplore.ieee.org/document/7847400/
WOS: 000441531600001
ISI: 2-s2.0-85018482882
ISSN: 1077-260X (Online), 1558-4542 (Online)

2016

[A3] "Periodical elements as low-cost building blocks for tunable terahertz filters", IEEE Photonics Technology Letters, Vol. 28, Issue 21. pp. 2459-2462, (2016)
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
doi: 10.1109/LPT.2016.2600645
http://ieeexplore.ieee.org/document/7544456/
WOS: 000386254600042
ISI: 2-s2.0-84994908891

ISSN: 1041-1135 (Online), 1941-0174 (eISSN)

[A2] "Flexible terahertz wire grid polarizer with high extinction ratio and low loss", Optics Letters, Vol 41, Issue 9, pp. 2009-2012, (2016)
A. Ferraro, D.C. Zografopoulos, M. Missori, M. Peccianti, R. Caputo and R. Beccherelli
doi: 10.1364/OL.41.002009
https://www.osapublishing.org/ol/abstract.cfm?uri=ol-41-9-2009
WOS: 000375073900029
ISI: 2-s2.0-84964989556
ISSN: 0146-9592 (Online), 1539-4794 (eISSN)

2012

[A1] "POLICRYPS Visible Curing for Spatial Light Modulator Based Holography", Journal of the Optical Society of America B-Optical Physics, Vol 29, Issue 11, pp. 3170-3176, (2012)
M. Infusino, **A. Ferraro**, A. De Luca, R. Caputo and C. Umeton
doi: 10.1364/JOSAB.29.003170
https://www.osapublishing.org/josab/abstract.cfm?uri=josab-29-11-3170
WOS:000310708700027
ISI: 2-s2.0-84870194369
ISSN: 0740-3224 (Online)

Congress Proceedings

2018

[P8] "Electrically tunable solid-state terahertz metamaterial absorbers" *Metamaterials The 12th International Congress on Artificial Materials for Novel Wave Phenomena*, Espoo, Finlandia, 27/08-01/09/2018
D. C. Zografopoulos, G. Isic, B. Vasic, **A. Ferraro**, G. Sinatkas, E. E. Kriezis, R. Gajic, and R. Beccherelli
http://congress2018.metamorphose-vi.org/files/Program2018.pdf

[P7] "Terahertz Guided-Mode Resonant Filtering Components", *Fotonica 2018*, Lecce (Italy), 22-25/06/2016
A. Ferraro, D. C. Zografopoulos, M. Missori, M. Peccianti, R. Caputo, and R. Beccherelli
(INVITED ORAL) Roberto Rella General Chair
https://convegni.aeit.it/fotonica/documenti/Fotonica2018_FinalProgramme.pdf

2017

[P6] "Terahertz frequency-selective surface and guided-mode resonance filters", *30th Annual Conference of the IEEE Photonics Society (IPC) 2017*, Orlando (USA), 01-05/10/2017
A. Ferraro, R. Caputo, D.C. Zografopoulos, and R. Beccherelli
doi: 10.1109/IPCon.2017.8116222
https://ieeexplore.ieee.org/document/8116222/

WOS: 000426792600239
ISI: 2-s2.0-85043481152
ISSN: 2374-0140, ISBN: 978-1-5090-6578-3
(ORAL)

[P5] "Terahertz narrowband transmission filters based on guided mode resonant metallic gratings" *VI International School and Conference on Photonics - PHOTONICA2017*, Belgrade, Serbia, 28/08-01/09/2017
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
http://www.photonica.ac.rs/docs/BookOfAbstracts_14.08.2017.pdf
(ORAL)

2016

[P4] "Tunable Terahertz Metamaterials Based On Nematic Liquid Crystals", *41st International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz) 2016*, Copenhagen (Denmark), 26-30/09/2016.
D.C. Zografopoulos**, A. Ferraro**, G. Isić, B. Vasić, R. Gajić, and R. Beccherelli
doi: 10.1109/IRMMW-THz.2016.7758898
http://ieeexplore.ieee.org/document/7758898/
WOS: 000391406200559
ISI: 2-s2.0-85006093144
ISSN: 2162-2027 (Printed), 2162-2035 (Online), ISBN: 978-1-4673-8485-8
(ORAL)

[P3] "Mechanically Tunable Bragg Filters For Terahertz Applications", *41st International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz) 2016*, Copenhagen (Denmark), 26-30/09/2016
A. Ferraro, D.C. Zografopoulos, R. Caputo and R. Beccherelli
doi: 10.1109/IRMMW-THz.2016.7758662
http://ieeexplore.ieee.org/document/7758662/
WOS: 000391406200324
ISI: 2-s2.0-85006173314
ISSN: 2162-2027 (Printed), 2162-2035 (Online), ISBN: 978-1-4673-8485-8
(POSTER)

[P2] "Terahertz polarizer on flexible and conformal substrate", *41st International Conference on Infrared, Millimeter, and Terahertz waves (IRMMW-THz) 2016*, Copenhagen (Denmark), 26-30/09/2016
A. Ferraro, D.C. Zografopoulos, M. Missori, M. Peccianti, R. Caputo and R. Beccherelli
doi: 10.1109/IRMMW-THz.2016.7758661
http://ieeexplore.ieee.org/document/7758661/
WOS: 000391406200323
ISI: 2-s2.0-85006138303
ISSN: 2162-2027 (Printed), 2162-2035 (Online), ISBN: 978-1-4673-8485-8

(POSTER)

[P1] "Flexible low-loss terahertz polarizer with high extinction ratio", *Fotonica 2016*, Rome (Italy), 6-8/06/2016, (1-page abstract, no full paper)

A. Ferraro, D. C. Zografopoulos, M. Missori, M. Peccianti, R. Caputo, and R. Beccherelli
(ORAL)

Signature