ELEZIONI DEL DIRETTORE DELL'ISTITUTO TeCIP
SCUOLA SUPERIORE SANT'ANNA DI PISA

MANDATO 2019/2025

Candidatura di Fabrizio Di Pasquale

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STRATEGIE DI SVILUPPO E SOSTENIBILITA'

L'Istituto di Tecnologie della Comunicazione, dell'Informazione e della Percezione (TeCIP), parte della Scuola Superiore Sant'Anna, è uno degli Istituti più numerosi della Scuola (unico Istituto di classe M della Scuola secondo il MIUR) e rappresenta una struttura complessa nella quale convivono realtà fortemente diversificate e non ancora del tutto integrate al fine di potere raccogliere i necessari consensi a una missione comune e ai relativi obiettivi strategici. Missione comune che dovrebbe a mio avviso confrontarsi anche con gli altri Istituti della Scuola, e in particolare con quelli della Classe di Scienze Sperimentali, al fine di individuare strategie condivise di crescita e di integrazione, nel rispetto delle specifiche individualità e verso una piena valorizzazione dei singoli contributi e del merito. Il presente documento riassume brevemente gli elementi ritenuti fondamentali a tale scopo, rappresentando la visione strategica proposta e l'approccio metodologico suggerito per il raggiungimento degli specifici obiettivi prefissati. Come vice-direttore nel precedente mandato ho condiviso una visione strategica basata su autonomia di ricerca e di gestione finanziaria dei progetti da parte dei relativi responsabili scientifici che, sebbene non pienamente attuata, ha rappresentato a mio avviso un passo importante verso un nuovo modello di governance che possa favorire una crescita sana e sostenibile dell'Istituto. Vorrei proseguire in questa direzione assegnando in particolare maggiori responsabilità a giovani ricercatori e docenti.

Con la mia candidatura a Direttore di Istituto vorrei condividere le conoscenze e le competenze che ho maturato in più di 25 anni di esperienza accademica e industriale, in Italia e all'estero, sia tecnica che gestionale e di relazioni personali, al fine di contribuire, con dedizione e responsabilità, alla crescita strategica dell'Istituto e al suo funzionamento ottimale sia per quanto riguarda gli aspetti di ricerca e formazione che gli aspetti istituzionali, organizzativi e amministrativi.

VISIONE STRATEGICA

La Scuola Superiore Sant'Anna rappresenta una realtà unica del sistema universitario italiano e dove quindi necessariamente confrontarsi con eccellenze a livello internazionale. In questa prospettiva è stata recentemente intrapresa un'azione di federazione con la Scuola Normale Superiore di Pisa e la Scuola Universitaria Superiore di Pavia, al fine di creare le condizioni necessarie a tale confronto. Ritengo tuttavia che il regolamento generale adottato dalla Scuola Sant'Anna, con l'organizzazione in 6 Istituti caratterizzati da propri regolamenti interni e vari livelli di autonomia gestionale e contabile, non sia del tutto adeguata ad una effettiva integrazione di realtà eterogenee, caratterizzate da proprie marcate individualità ma in parte anche da evitabili sovrapposizioni.

Credo sia necessario preventivamente migliorare le sinergie e l'integrazione fra le varie anime della nostra Scuola prima di riuscire nell'ambiziosa azione di integrazione a livello di scuole superiori. A tal fine ritengo di fondamentale importanza lavorare sia sui singoli Istituti che ad una maggiore integrazione delle scuole di ingegneria e scienze delle vita, delle aree di economia e management, come anche ad una migliore interazione fra scienze sociali e scienze applicate. Esempio calzante potrebbe essere la formazione di una unica scuola di ingegneria che rispetti le singole anime degli attuali istituti e che interagisca con le scienze della vita, le scienze sociali e umane verso lo sviluppo di sistemi autonomi intelligenti in grado di sviluppare nuove tecnologie ma anche nuovi paradigmi di pensiero. Un tale processo richiede la valorizzazione di moltissimi aspetti già presenti nei nostri istituti ma anche l'investimento verso aree strategiche sottodimensionate o del tutto assenti.

Occorrerà quindi a mio avviso iniziare lavorando a far si che l'Istituto TeCIP risulti un ente di ricerca integrato, solido e compatto, con visibilità internazionale per le sue riconosciute competenze scientifiche e tecnologiche. Il nostro Istituto esprime molto ma potrebbe fare di più esternando un forte potenziale inespresso; in particolare potrebbe contribuire fortemente a nuove linee di sviluppo tecnologico e applicativo per la società del futuro, creando sinergie ed armonia fra le varie macro-aree con una visione strategica condivisa.

SOSTENIBILITA'

La Scuola ha investito molto negli ultimi anni nella valutazione e la valorizzazione della ricerca, ottenendo risultati eccellenti in termini di VQR e riconoscimenti importanti in termini di risorse (si pensi ai progetti Dipartimenti di Eccellenza delle due Classi Accademiche finanziati dal MIUR e al Centro di Competenza Artes 4.0 finanziato dal MISE).

Tuttavia credo che al tempo stesso abbia in parte trascurato un aspetto fondamentale per la strategia di crescita a lungo termine e la sua sostenibilità, l'investimento e la valorizzazione delle risorse umane, con particolare riferimento ai giovani.
Aspetto fondamentale e strategico per lo sviluppo di un Istituto di ricerca sano e in grado di offrire prospettive reali di crescita ai giovani, in un contesto dove ancora persistono alcune forme di precariato. L'Istituto TeCIP, fra i più numerosi della Scuola Superiore Sant'Anna, con circa 200 addetti fra docenti, ricercatori, assegnisti, studenti di PhD, tecnici e amministrativi, può contare su un budget annuo superiore ai 10 milioni di euro proveniente dal mercato della ricerca pubblica e privata. Tutto ciò si fonda pesantemente sulle attività di ricerca di ricercatori a tempo determinato (RTD A), assegnisti di ricerca e studenti di dottorato, non consentendo consolidamento e continuità, e generando inevitabile frustrazione nei giovani che si vedono contribuire significativamente al raggiungimento di risultati eccellenti senza opportunità di crescita dignitosa e consona alle loro aspettative. La strategia dell'Istituto TeCIP con il mandato del Direttore attuale ha già mosso i primi passi verso una soluzione condivisa, privilegiando posizioni di RTD B rispetto a chiamate dirette di docenti esterni e progressioni interne di carriera. Su tale punto occorrerà lavorare in modo condiviso e sinergico fra le varie aree dell'istituto per garantire un giusto equilibrio e la necessaria sostenibilità del modello di crescita. Sarà a tale fine importante trovare utili sinergie e interazioni con aziende spin-off, consorzi di ricerca, fondazioni e solide realtà industriali esterne, che possano offrire reali opportunità di crescita e valorizzazione a giovani ricercatori e imprenditori.

RICERCA

La ricerca dell'Istituto TeCIP è finanziata attualmente più del 50% da progetti conto terzi, con un sensibile calo negli ultimi anni relativamente a progetti istituzionali, con particolare riferimento a progetti finanziati dalla Comunità Europea. Spesso i progetti istituzionali, quali quelli finanziati dalla Regione Toscana, richiedono elevate percentuali di co-finanziamento da parte dell'Istituto, con l'inevitabile tendenza all'utilizzo di fondi provenienti da contatti conto-terzi. Tale modello è a mio avviso non sostenibile nel lungo termine e ritengo a tal fine fondamentale relazionarsi positivamente ed efficacemente con realtà esterne quali SNS, IUSS e Università di Pisa, per instaurare quelle necessarie sinergie di ricerca che possano portare alla massa critica richiesta per competere a livello globale in settori tecnologici avanzati quali quelli nei quali opera il TeCIP.
Un giusto equilibrio fra progetti istituzionali e progetti conto-terzi potrà garantire il soddisfacimento dei criteri di qualità richiesti dall'ANVUR, come anche un efficace

trasferimento tecnologico, di fondamentale importanza per un Istituto di ingegneria come il TeCIP.
Dovranno essere individuate nuove aree strategiche su cui investire nel futuro e che possano portare ritorno in termini di finanziamenti, eccellenza della ricerca e trasferimento tecnologico. Esempi possono già essere individuati nelle tematiche del progetto Dipartimenti di Eccellenza (robotica, scienza dei materiali, intelligenza artificiale, sensoristica) e altri potranno essere individuati anche considerando nuove sinergie con SNS e IUSS (cambiamenti climatici, tecnologie per lo spazio e monitoraggio di grandi infrastrutture, per fare alcuni esempi).

TRASFERIMENTO TECNOLOGICO

Il problema della sostenibilità del modello di crescita della Scuola e dei suoi Istituti è serio e di difficile soluzione. Probabilmente di fondamentale importanza potranno essere le scelte strategiche di indirizzo che verranno effettuate dagli organi di governo dell'istituto (Giunta e Consiglio di Istituto) e l'incentivazione vera, e non solo dichiarata, del trasferimento tecnologico e della crescita sana di aziende spin-off che possano dare sbocchi concreti a giovani imprenditori e ricercatori.
La crescita dell'Istituto, se pur limitata in termini di punti organico disponibili, dovrà essere sostenibile e garantire equilibrio tra le macro-area pur tuttavia avendo chiare le aree strategiche su cui investire per il futuro e nelle quali cercare sbocchi occupazionali.
Di particolare importanza saranno le relazione con la Fondazione Inphotec che dovranno essere sostenute e migliorate al fine di valorizzarne pienamente le già eccellenti potenzialità tecnologiche, pur rendendola finanziariamente indipendente.

FORMAZIONE E DIDATTICA

Come emerso recentemente dai confronti con gli allievi ordinari, è evidente la necessità di una riorganizzazione dell'offerta didattica integrativa, al momento frastagliata e non strutturata adeguatamente. Sono già in discussioni iniziative mirate alla riorganizzazione della didattica interna in curricula che possano offrire agli allievi percorsi di crescita su tematiche strategiche e per loro interdisciplinari, comprendendo corsi di base, di approfondimento e sperimentali.
Tale iniziativa potrà portare notevoli benefici reciproci, fra i quali evidenzierei un maggiore coinvolgimento degli allievi ordinari nelle attività di ricerca dell'Istituto, con tesi di laurea magistrale e futuri percorsi di PhD.
Al momento gli allievi ordinari che svolgono tesi presso il TeCIP e che successivamente intraprendono corsi di PhD sono molto pochi.

Per quanto riguarda i corsi di PhD è evidente la necessità di migliorare la qualità all'ingresso, per esempio mediante una più efficace comunicazione esterna e un maggiore coinvolgimento degli allievi ordinari.
Visti i recenti insuccessi nel coordinamento con l'Università di Pisa relativamente a percorsi congiunti di laurea magistrale, sarà fondamentale riprendere tali iniziative congiunte allargandole anche a SNS e IUSS su tematiche relative alla scienza dei materiali, intelligenza artificiale e big data.

GOVERNANCE DELL'ISTITUTO

La governance dell'Istituto e gli organi di governo (Giunta, Consiglio di Istituto e coordinatori di macroarea) dovranno garantire una gestione efficiente e trasparente. A tal fine ritengo fondamentale la dedizione, il senso di responsabilità e la dinamicità del personale coinvolto. Maggiore spazio a giovani dinamici e intraprendenti potrà certamente migliorare la situazione attuale, spesso caratterizzata da scarsa comunicazione all'interno delle stesse macroaree.
Coordinandosi con la nuova Rettrice e il Responsabile Amministrativo del TeCIP sarebbe inoltre auspicabile rendere il sistema operativo e gestionale della ricerca più snello e efficiente, lavorando a tal fine a un piano di stabilizzazione per il personale amministrativo e i tecnici di laboratorio.
Si potranno inoltre individuare, oltre ai tre coordinatori di macroarea, quattro referenti che coordino piccoli gruppi di lavoro, comprendenti anche personale tecnico amministrativo, sulle quattro aree strategiche: ricerca, formazione, terza missione e internazionalizzazione.

COMUNICAZIONE ESTERNA

L'Istituto TeCIP è stato poco attivo in termini di comunicazione esterna, rispetto a altri Istituti della Scuola e in particolare rispetto all'istituto di Biorobotica. Ciò è probabilmente legato alla maggiore attitudine del TeCIP alla ricerca e al trasferimento tecnologico piuttosto che agli aspetti mediatici.
Ritengo tuttavia importante potenziare tale aspetto con risorse dedicate e in maggiore sinergia con l'Ufficio Comunicazione della Scuola.

RAPPORTI UMANI

Riprendo tale aspetto dal programma del Direttore uscente in quanto condivido pienamente l'importanza di valori essenziali quali il senso di soddisfazione esistenziale, l'armonia, la reciprocità e la positività nei rapporti di lavoro.

L’Istituto entra in modo preponderante in tali aspetti in quanto mette a contatto individui, creando posti di lavoro e ricchezza, e svolgendo un ruolo cruciale nel decidere il livello di vita e quello di felicità delle persone. Nel luogo di lavoro dovrebbe essere presente una condizione di armonia e reciprocità tra le persone, attualmente non sempre presente, a qualunque livello, in modo che per ciascuna di esse possa generarsi una forma di soddisfazione non solo dipendente da ciò che si ottiene o si consegue.
Consapevole delle difficoltà insite in tale obiettivo, ritengo tuttavia che si possa sensibilmente migliorare la situazione attuale dell’Istituto anche relativamente a tali aspetti di relazioni interpersonali.

TeCIP INSITURE DIRECTOR ELECTION

SCUOLA SUPERIORE SANT'ANNA DI PISA

TERMS 2019/2025

Election Program, Fabrizio Di Pasquale

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STRATEGIC VISION AND SUSTENABILITY

The Institute of Communication, Information and Perceptual Technologies (TeCIP), part of Scuola Superiore Sant'Anna, is one of the largest Institute of the School (the only one classified by MIUR as medium size within Scuola Superiore Sant'Anna) and represents a complex structure where several different entities coexist, not fully integrated yet in order to build the necessary supports for a common strategic vision and to achieve the related goals. Such common vision should in my vision match with the other Institutes of the School, and in particular within the Applied Science Division (Classe di Scienza Applicate), in order to meet common growing strategies and integration polices, fully respecting each distinctiveness toward a full recognition of merit and contribution.

This document summarizes the key concepts to this end, describing the proposed strategic vision and the methodology suggested to reach specific goals.

As a vice-director in the previous TeCIP director term, I have fully shared a strategic vision based on a greater degree of research and management autonomy by the principal investigators of the specific research projects; although not fully implemented this vision has represented an important step forward to a new model of governance able to promote a healthy and sustainable growth. I would like to go on in this direction assigning more and more responsibilities to young assistant and associate professors.

With this election program I would like to share with you my over 25 years of academic and industrial experience, in Italy and abroad, both technical and managerial, also related to human relations; I wish to effectively contribute, with full dedication and responsibility, to a strategic growth of the Institute and to its optimal management, concerning research, training as well as administration.

STRATEGIC VISION

Scuola Superiore Sant'Anna, as a unique Institution within the italian university system, is having to face excellence at international level. In such a perspective a federation action has been recently initiated with Scuola Normale Superiore in Pisa and Scuola Universitaria Superiore in Pavia, in order to create the required conditions to address such a strong competition. However I believe that the actual regulations of the School, at present organized within 6 Institutes, characterized by their own internal rules and different level of self-governance, is not suitable yet for an effective integration of such heterogeneous entities, characterized by distinctiveness but sometimes also by overlapping. For a successful integration of the Italian schools of excellence we should first improve our organization, and to this end we need to work at the Institute level toward a better integration of the engineering schools with life science, of the schools of management and economics, addressing as well the relationship between human and applied sciences. A well-fitting example could be building a unique engineering school within Scuola Superiore Sant'Anna, which should respect the distinctiveness of the actual Institutes and interact with life and social sciences toward the development of intelligent automation systems exploiting new technologies and developing new ways of thinking. Such a complex process would require further development of several frameworks already within our Institute, as well as the investment into new strategic area. We then need to work first within the TeCIP Institute, to achieve a solid and integrated entity, fully recognized internationally for its scientific and technological excellence.

Although our Institute performs rather well it could improve by exploiting a strong unexpressed potential; in particular it will be possible to address several needs of our future society by creating synergies among their different research macro-area, toward a common strategic vision characterized by a strong contribution to new technology developments.

SUSTAINABILITY

The School has recently strongly invested to improve the quality of its research achieving excellent results in terms of VQR and funding (consider for example the two "Dipartimenti di Eccellenza" projects and the Artes4.0 Competence Center, recently funded by MIUR and MISE respectively). However a fundamental aspect for a long term sustainable strategic growth has been partially overlook; the investment in human resources, referring in particular to young researchers. I believe that this a fundamental aspect for an healthy growth of a research center, which should try to

guarantee sound career perspectives to young people, within a system still characterized by jobs insecurity. The TeCIP Institute, one of the largest of the School, with more than 200 employees, including professors, assistant professors, post-docts, PhD students and technical administrative staff, get over 10 million Euro funding per year from public and private entities. This achievement is strongly based on the great effort of young researchers, such as assistant professors (RTD A), post-docts (assegnisti di ricerca) and PhD students, all employed by the School on fixed term contracts, not guaranteeing complete sustainability; this is also sometimes generating frustration due to the awareness of lack of solid opportunities for a dignified professional growth, although the excellent performance achieved by their employee in terms of VQR and fund raising. The TeCIP strategy within the mandate of the outgoing director has taken important steps toward a solution, consisting in prioritizing RTD B positions rather than internal career progressions and call for external professors. I think we must further work in this direction, with shared support from the different research area of the Institute, ensuring a right balance for a successful and sustainable growth model. To this end it will be extremely important to support synergies and interactions with spin-off companies, research consortia and foundations, in such a way to generate valuable job opportunities for young researchers also outside the School.

RESEARCH

The TeCIP Institute research activities are at present funded more than 50% by private contracts, with a significant drop in the last years of public funding, especially projects funded by the European Union. Also, the actual public funding model, as the one adopted by the regional government (Regione Toscana), often requires rather high co-financing rates from the Institute, which inevitably comes from private funding. This model is in my view unacceptable and not sustainable on long terms; stronger interactions should be established with SNS, IUSS and the University of Pisa to reach a critical mass and successfully compete in a high tech sector such as the one in which TeCIP operates. A right balance between government and private funding would guarantee a high VQR performance, as required by ANVUR, as well as an effective technology transfer which is a key point for an engineering institute as TeCIP. New strategic area must be identified for future investments, able to guarantee excellence in research, abundance of funding and an effective technology transfer process. Good examples can be found within the recent funded “Dipartimento di Eccellenza” project (new generation robots, material science, artificial intelligence, advanced sensing) and more strategic research area can be identified in synergy with SNS and IUSS (climate changes, space technologies and structural health monitoring of large infrastructures, to give some examples).

TECHNOLY TRANSFER

The growth model sustainability of the School and their Institutes is rather challenging. Strategic plans taken by the governance will be key points, such as a real support, not only declared, to an effective technology transfer and to the constitution of healthy spin-off companies able to provide solid job opportunities for young researchers. The growth of the Institute, although limited in terms of academic permanent positions, must be sustainable and balanced among the different research area, also having a clear view on the strategic directions to follow in order to create new job opportunities. Of particular importance will be the relationship with the Inphotec foundation, which should be supported to fully exploit its strong technological potential, while making it financially fully independent from the Institute and the School.

TEACHING AND TRAINING

As recently discussed with undergraduate students of the School, it is clearly evident that the teaching programs and educational offer must be effectively improved with respect to the present situation, characterized by rather poor structure of the offer. Several curricula will be identified in order to structure the teaching internal offer into growing paths, focused on strategic and interdisciplinary topics, including basic, advanced and experimental courses within each curriculum. Such an effort will lead to mutual benefits including larger involvement of undergraduate students within the research activities of the Institute, with larger participation in Master and PhD programs. Concerning the PhD programs of the Institute, a great effort should be dedicated to improve the selection process, for example with a more efficient external communication strategy and also improving the involvement of undergraduate students from the School, clearly showing high standard and research potential.

Given the recent unsuccessful coordination with University of Pisa concerning joint Master programs (two of them involving the TeCIP Institute have been recently closed), we will undertake new actions in this direction, also involving SNS and IUSS, considering new initiatives focused on strategic topics like material science, artificial intelligence and big data.

TeCIP GOVERNANCE

The governance of the Institute with its managing bodies (Giunta, Consiglio di Istituto and macro-area coordinators) will operate efficiently and in a transparent

manner. To this end I believe that commitment, responsibility and dynamism of the management bodies will be key points to success. More responsibilities to young and proactive people will certainly improve the present situation, where sometimes lack of communication has be noted even within the same research area. The management system can be made more efficient by coordinating actions among the rector, the management director and the TeCIP administrative manager, also working toward a stabilization of the Institute technical and administrative staff. In addition to the three macro-area coordinators, it would be strategic to identify four working groups dealing with the most important missions of the Institute: research, teaching, technology transfer and internationalization.

EXTERNAL COMMUNICATION

The TeCIP Institute, if compared to other Institutes of the School like for example BioRobotics, has never been particularly active in external communication. This is likely due to the fact the TeCIP has been more prone to research and technology transfer rather than to media communications. It is however important to boost up the external communication skills of the Institute by employing dedicated resources and improving the interaction with the Communication Office of the School.

HUMAN RELATIONSHIPS

I resume this aspect from the outgoing director program, as I fully share his vision and the importance given to essential values such as life satisfaction, wellness, reciprocal and positive working relationships. The Institute can crucially affect such feelings as people are necessarily interacting, generating wealth and job opportunities, and playing then a key role for the happiness and life style of the employees. In the working place harmony and reciprocity should always be present and I think this not always true within our institution. Although fully aware of the difficulty of this goal, I think however that interpersonal relationships within the TeCIP Institute can be improved, generating forms of satisfaction not only related to research and technical achievements.

CURRICULUM VITAE (MAY 2019)

Fabrizio Cesare Filippo Di Pasquale

PERSONAL

Name: Fabrizio Cesare Filippo
Surname: Di Pasquale
Date of birth: 01/09/1963
Place of birth: Melito di Porto Salvo (RC), Italy
Nationality: Italian
Married with two children

EDUCATION

1990-1993: Doctoral Studies in Information Technology, Universita' degli Studi di Parma, Italy
Ph.D. Thesis: "*Theoretical and Experimental Characterisation of Erbium-Doped Fibre Amplifiers and Rare-Earth Doped Waveguides for Integrated Optics*"
04/1990: Passed qualification exam to the Profession of Engineer in Italy
1983-1989: Degree in Electronic Engineering, Universita' degli Studi di Bologna, Italy
Thesis: "*Full-Vectorial Finite-Element Modal Analysis of Optical Waveguides*"
1978-1982: Diploma di Maturita' Scientifica, Liceo Scientifico ``M. Fanti", Carpi (MO), Italy

PROFESSIONAL AND RESEARCH EXPERIENCE

06/2013 - present: Full Professor in Telecommunications, **Scuola Superiore Sant'Anna**, Pisa, Italy
12/2016 - present: Vice Director of the Institute of communication, Information and Perception Technologies (TECIP) at Scuola Superiore Sant'Anna, Pisa, Italy
10/2018 - present: Member of the National Academic Qualification for Associate and Full Professorships in telecommunications (**Abilitazione Scientifica Nazionale** alle funzioni di professore universitario di prima e seconda fascia nel settore concorsuale 09/F2-TELECOMUNICAZIONI)
04/2014: Co-founder of **Infibra Technologies S.r.l.**, spin-off company of **Scuola Superiore Sant'Anna**, developing and marketing fiber optics sensor systems
05/2011-12/2013: Director of **CNIT** National Laboratory of Photonic Networks, from May 15th 2011
Leader of the "*Optical fiber sensors and integrated photonic subsystems"* group at **Scuola Superiore Sant'Anna** *(1 full professor, 3 assistant professors, 5 post-doctoral researchers, 3 Ph.D. students)*
02/2002-06/2013: Associate Professor in Telecommunications, **Scuola Superiore Sant'Anna**, Pisa, Italy
12/2011-01/2012: Selected by **Rete Ferroviaria Italiana** (RFI) as Member of the Committee for technical evaluation of the tender: "Portali multifunzioni (PMF) per riconoscimento incendio a bordo e violazione della sagoma limite: valutazione caratteristiche tecniche e determinazione del relativo punteggio"
09/2011-01/2014: Representative Member of Scuola Superiore Sant'Anna within the "*Distretto per le Tecnologie Ferroviarie, l'Alta Velocità e la Sicurezza delle Reti"* - **Regione Toscana**
11/2007: Co-founder of **FiberSens S.r.l.,** spin-off company of Scuola Superiore Sant'Anna, developing and marketing fiber optics sensor systems
02/2000-02/2002: Senior Researcher, **Cisco Photonics Italy, R&D Department**
R&D Topics: Ultra-long-haul terrestrial WDM optical communication systems, Optical amplifiers, Raman amplifiers, Nonlinear effects in optical fibers
04/1998-02/2000: Researcher, **Pirelli Optical Systems Italia S.p.A., R&D Department**
R&D Topics: Terrestrial WDM optical communication systems, Optical amplifiers, Raman amplifiers, Nonlinear effects in optical fibers, Wavelength planning in WDM systems and networks
10/1994-03/1998: Research Fellow, Department of Electronic and Electrical Engineering, **University College London, UK**

Research Topics: Finite element analysis of liquid crystal materials for display applications and optical communications, High-capacity WDM optical communication systems and networks, Rare-earth-doped fibre/waveguide amplifiers and lasers

01/1994-09/1994: Post-Doctoral Fellowship, Department of Electronic and Electrical Engineering, **University College London, UK**

Research Topics: Design of high-concentration rare-earth-doped waveguide, amplifiers and lasers, System applications of erbium-doped fibre amplifiers

1993: Third year of the Doctoral Studies, Academic Visitor, Department of Electronic and Electrical Engineering, **University College London, UK**

Research Topics: Theoretical analysis of optical nonlinearities in high-concentration rare-earth-doped waveguides

1992: Second year of the Doctoral Studies, Stage in **Pirelli Cavi S.p.A.,** Milano, R&D Department

Research Topics: Experimental characterisation of erbium-doped fibre amplifiers for submarine applications and WDM communication systems.

1991: First year of the Doctoral Studies, **Universita' degli Studi di Parma, Italy**

Research Topics: Modelling of erbium-doped fiber amplifiers

01/1990-11/1990: Research Assistant, Dipartimento di Elettronica Informatica e Sistemistica, **Universita' degli Studi di Bologna, Italy**

Research Topics: Finite element analysis of nonlinear optical waveguides

MAIN RESEARCH PROJECTS COORDINATION AT SCUOLA SUPERIORE SANT'ANN, CNIT AND INFIBRA TECHNOLOGIES SRL:

1. **Principal investigator** of the joint – Lab "Sensoristica avanzata per turbomacchine",
   Sponsor: GE Oil&Gas Nuovo Pignone a Firenze, 2016-2019
   Funding for Scuola Superiore Sant'Anna: 585.000 Euro
2. **Scientific coordinator** for Scuola Sant'Anna of the project MIIID "Ricerca e sviluppo di metodi e processi innovativi ad alta automazione per la caratterizzazione e la realizzazzione di una nuova generazione di iniettori ad iniezione diretta e ad elevate prestazioni,
   Sponsor: Regione Toscana, Bando POR FESR 2014-2020, 2017-2019
   Funding for Scuola Superiore Sant'Anna: 670.000 Euro
3. **Scientific coordinator** for Infibra Technologies Srl and **WP leader** for Scuola Superiore Sant'Anna of the project: STECH "Smart Turbine Technologies,
   Sponsor: Regione Toscana, Bando FAR-FAS 2014, 2016-2019,
   Funding for Infibra Technologies S.r.l.: 161.000 Euro
   Funding for Scuola Superiore Sant'Anna: 742.000 Euro
4. **Principal investigator** of the project: "Monitoraggio della sovrastrutture ferroviaria mediante sensori in fibra ottica"
   Sponsor: Rete Ferroviaria Italiana,2016-2017
   Funding: 1.027.000 Euro
5. **Principal investigator** of the project "Monitoring Gas compressors using FBG sensors,
   Sponsor: GE Oil&Gas Nuovo Pignone, 2014-2015,
   Funding: 42.000 Euro
6. **Scientific coordinator** of the CNIT research unit in the European project IRIS:
   "Integrated Reconfigurable sIlicon phonic Switch", Sponsor: European Commission, STREP Project (FP7 Program)
   Sponsor: European Commission, STREP Project (FP7 Program), 2014-2016
   Funding for CNIT: 594.000 Euro
7. **Principal investigator** of the project "Sviluppo e verifica in campo di un sistema di rilevazione incendi in gallerie ferroviaria mediante sensoristica Raman distribuita"
   Sponsor: Rete Ferroviaria Italiana, 2011-2012
   Funding: 375.000 Euro
8. **Principal investigator** of the project "Sviluppo di un sensore distribuito in fibra ottica basato su scattering Raman e tecniche OTDR"
   Sponsor: Fondazione Cassa di Risparmio di Pisa, 2008/2009,
   Funding for Scuola Superiore Sant'Anna: 195.000 Euro.
9. **Scientific coordinator** of the Sant'Anna research unit in the European project: "Light Amplifiers with NanoClusters and Erbium",
   Sponsor: European Commission, STREP Project (FP6 Program 033574), 2006/2009,
   Funding for Scuola Superiore Sant'Anna: 230.000 Euro.

Principal investigator of mobility projects with Republic of South Korea from 01-01-2003 to 31-12-2011:

10. "Design, realization and experimental characterization of lumped Raman amplifiers for WDM metro-core applications", Sponsor: Italian Ministry of Foreign Affairs (MAE), Korean Ministry of Science & Technology, 2005/2006 - Mobility Project;
11. "Design, realization and characterization of Raman and Brillouin based distributed fiber optic temperature sensors", Sponsor: Italian Ministry of Foreign Affairs (MAE), Korean Ministry of Science & Technology, 2007/2009 - Mobility Projet.

WP leader for private contracts funded by Marconi Communications S.p.A. and Ericsson Telecommunications S.p.A. from 2003 to 2011:

12. "Integrated Photonic Subsystems", 2009/2011 (150.000 Euro);
13. "Network performance monitoring", 2006/2007 (150.000 Euro);
14. "High Power, low RIN Raman Pump module for improved performances in long span unrepeated
15. WDM transmission systems",2005/2006 (150.000 Euro);
16. "Suppression of penalties induced by parametric nonlinear interaction in counter-pumped distributed Raman amplifiers based on NZ-DS and DSF fibers, operating in resonant conditions", 2004/2005 (150.000 Euro);
17. "OSNR improvement in metro WDM ring networks", 2003/2004 (150.000 Euro).

TEACHING EXPERIENCE

- 2018-2019 – "***Fundamental of photonics: from Maxwell to optical fibers***", Erasmus Mundus Master PIXNET, joint Master program with Aston University – Eindhoven University of Technologies - Netherland – Osaka University - Japan
- From 2002 I have been teaching the following courses at Scuola Superiore Sant'Anna:
  - "***Electromagnetic fields and propagation***" – undergraduate – graduate and Ph.D. students
  - ***"Optical components and fiber optic sensors"* -** undergraduate - graduate and Ph.D. students
  - ***"Fundamental of optical fiber sensors"* -** undergraduate students
- From the academic year 2010-2011 I have been teaching the courses "***Optical amplification and sensing***" and "***Electromagnetic field and propagations, part 1 and part 2****"* within the Erasmus Mundus Master on Photonic Networks (MAPNET), joint Master program with Aston University – UK, Technische Universität Berlin – Germany, Osaka University - Japan
- From the academic year 2010-2011 I have been teaching the courses "***Optical amplification and sensing***" and "***Electromagnetic field and propagations, part 1 and part 2***" within the Graduate Program in Information and Communication Technologies (GPICT), joint Master program with the University of Trento, Italy
- From the academic year 2009-2010 I have been teaching the courses "***Optical amplification and sensing***" **9 CFU** and "***Electromagnetic field and propagations,*** *part 1*" **2 CFU** within the Master of Science in Computer Science and Networking (MCSN), joint Master program with the University of Pisa – Italy
- From the academic year 2005-2006 I have been teaching the courses "***Optical amplification and sensing***" and "***Electromagnetic field and propagations, part 1 and part 2***" within the International Master on Communication Networks Engineering (IMCNE)
- In the academic years 2006/2007 I have been teaching the course "***Fundamental of optical components and amplification***" within the *"International Master on Robotics and Mechatronics"*, organized by Scuola Superiore Sant'Anna.
- In 2002 and 2005 I gave the course **"*Optical amplifiers for WDM transmission systems and networks"*** within the *"Teledoc Project"* organized by the National Inter-University Consortium for Telecommunications (CNIT).
- From 1993 to 1996 I gave 12 hours lectures per year within the course "***Optical Communications***" at the University of Parma.
- In 1996 I gave the course "***Optical amplifiers and their system applications***" at the Pontificia Universidade Catolica do Rio de Janeiro, Brasil.

RESEARCH AND TEACHING ACTIVITIES ABROAD

Research Fellow presso il Department of Electrical and Electronic Engineering, Univeristy College London, UK
From 01-10-1994 to 31-03-1998

Teacher at the Pontificia Universidade Catolica do Rio de Janeiro, Brasil
From 01-05-1996 to 31-05-1996

Fabrizio Cesare Filippo Di Pasquale has been supervisor of **17 Ph.D. Students** and several Master and Undergaduate Students at Scuola Superiore Santa'Anna from 2002 to 2019. He has supervised several Erasmus Students from Germany during his employment at University College London from 1994 to 1998.

FORMER Ph.D. STUDENTS:

Stefano Faralli (Scuola Superiore Sant'Anna, TECIP Institute, Pisa, Italy)
Gabriele Bolognini (National Research Council, CNR, Bologna, Italy)
Arismar Cerqueira Sondre (National Institute of Telecommunications, Inatel, Brasil)
Claudia Cantini (AP Sensing, UK)
Valentina Donzella (University of Warwick, Coventry, UK)
Tomasz Rogowski (PSE Innowacje Sp. zo.o., Wroclaw, Poland)
Paolo Pintus (University of California Santa Barbara, USA)
Veronica Toccafondo (CNIT Photonic Networks National Laboratory, Pisa, Italy)
Marcelo Alfonso Soto Hernandez (École Polytechnique Fédérale de Losanne, EPFL, Switzerland)
Sohel Mahmud Sher (Khulna University, Bangladesh)
Mohammad Taki (Université Libanaise, Beirut, Lebanon)
Farhan Zaidi (AP Sensing GmbH, Germany)
Iacopo Toccafondo (CERN, Switzerland)
Yonas Muanenda (Scuola Superiore Sant'Anna, Pisa, Italy)
Fabrizio Gambini (University of California Santa Barbara, USA)
Costanza Manganelli (IHP, Frankfurt Oder, Germany)
Yisbel Eloisa Marin (Scuola Superiore Sant'Anna)

INVITED PRESENTATIONS TO PEER-REVIEWED, INTERNATIONALLY ESTABLISHED CONFERENCES AND/OR INTERNATIONAL ADVANCED SCHOOLS AND WORKSHOPS:

- **Suboptic** 2004, Monaco (Short Course on Raman amplification)
- **Photonics** 2004, Cochin, India (Invited talk on distributed Raman amplification)
- **Asian Pacific Optical Communications** 2005, Shangai, China (Invited Talk on distributed Raman amplifiers for WDM transmission systems)
- **Bilateral Workshop Italy-China**, Xi'an, October 2006 (Invited talk on Raman amplifiers)
- **Bilateral Workshop Italy-Japan**, Osaka, July 2007 (Invited talk on nanocluster sensitized erbium doped waveguide amplifiers)
- **Training School on Optical Fiber Sensing**, COST Action TD1001 (Novel and reliable optical fibre sensor systems for future security and safety applications), Madeira Island, Portugal. September 2012 (Lecture on "*Raman distributed temperature sensing*").
- **Frontiers in Optics/Laser Science, FiO/LS 2012, Optical Society of America Annual Meeting** (Invited paper on optical fiber sensors, October 14 – 18, 2012, Rochester, New York, USA)

- **Winter College on Optics: Fundamental of Photonics – Theory, Devices and Applications,** The Abdus Salam International Centre for Theoretical Physics (ICTP), Trieste, Italy, 10-21 February 2014 (Lectures on Optical Fiber Sensors)
- **Training School "Optical fiber sensors: from research to real world"**, COST Action TD1001 (Novel and reliable optical fibre sensor systems for future security and safety applications), September 1-3, 2014, Chandolin in the Swiss Alps, Switzerland (Lecture on "Distributed Raman sensing: Application to fire detection in tunnels")
- **10th Optoelectronics and Photonics Winter School,** "Nonlinear Photonics"**,** 20-26 January 2019, Andalo Trento
- **7th International Symposium on Sensor Science (MDPI),** 9-11 May 2019, Napoli, Italy (Special Session Chair "Distributed sensing in optical fibers")

INVITED SEMINARS:

- *Marconi Communications**, Genova, Italy (periodic presentations within the contracts Marconi-CNIT, 2002-2007)***
- *Indian Institute of Technology**, Kharagpur, India, December 2002***
- *University of Bath**, UK, January 2003***
- *Aston University**, Birmingham, UK, January 2003***
- *Agilent Labs**, Palo Alto, USA, October 2003***
- *ST Microelectronics**, Catania, Italy, December 2003***
- *Marconi Corporation**, Coventry, UK, March 2004***
- *Furukawa Electrics Co.**, Tokyo, Japan, April 2004***
- *Seoul National University**, South Korea, April 2004 e July 2007***
- *Korean Institute of Technology**, Seoul, South Korea, April 2004***
- *National Institute of Information and Communications Technology**, Tokyo, Japan, April 2004***
- *University of Southampton**, UK, January 2005***
- *University of California Santa Barbara, **Santa Barbara, USA, March 2011***
- *University of Ghent, **Ghent, Belgium, June 2011***

PARTECIPATION IN TECHICAL PROGRAM COMMITTEES OF INTERNATIONAL CONFERENCES:

Fabrizio Cesare Filippo Di Pasquale has been member of the Technical Program Committee of the following international conferences:

Asian Pacific Optical Communications APOC 2006 (Passive Components and Fiber-Based Devices), Gwangju, South Korea

European Conference on Optical Communications ECOC 2009 (Waveguide and Optoelectronic Devices), Vienna, Austria

European Conference on Optical Communications ECOC 2010 (Fibres, Fibre Devices, and Amplifiers), Torino, Italy

European Conference on Optical Communications ECOC 2011 (Waveguide and Optoelectronic Devices), Geneve, Switzerland

European Conference on Optical Communications ECOC 2012 (Waveguide and Optoelectronic Devices), Amsterdam, The Netherlands

Frontiers in Optics/Laser Science FiOS/LS 2013, Optical Society of America Annual Meeting, Orlando, Florida, USA

Optoelectronic and Communication Conference/Australian Conference on Optical Fiber Technology OECC/ACOFT 2014, Melbourne Australia

Frontiers in Optics/Laser Science FiOS/LS 2014, Optical Society of America Annual Meeting, Tucson, Arizona, USA

Frontiers in Optics/Laser Science FiOS/LS 2015, Optical Society of America Annual Meeting, San Jose, California, USA

Asia-Pacific Optical Sensors Conference (APOS) 2015, Jeju Island, Korea, 20-22 May 2015

Frontiers in Optics/Laser Science FiOS/LS 2016, Optical Society of America Annual Meeting, Rochester, NY, USA

Asia-Pacific Optical Sensors Conference (APOS) 2015, Jeju Island, Korea from May 20 to 22, 2015

Europen Workshop on Optical Fiber Sensors (EWOFS 2016), 31 May – 3 June 2016, Limerick, Ireland.
Asia-Pacific Optical Sensors Conference (APOS) 2016, Shanghai, China, 11-14 October 2016 (co-chair of Sub-Committee Track 8: Distributed, Multiplexed and Networked Sensing)
IEEE International Instrumentation & Measurement Technology Conference I^{2}MTC 2019, May 14-17, 2018, Houston, Texas, USA
IEEE International Instrumentation & Measurement Technology Conference I^{2}MTC 2019, May 20-23, 2019, Auckland, New Zealand
Europen Workshop on Optical Fiber Sensors (EWOFS 2019), 1-4 October 2019, Limassol, Cyprus.

He is in the **BOARD OF REVIEWERS** of the following **leading international peer-reviewed journals**:

IEEE/OSA Journal of Lightwave Technology
IEEE Journal of Quantum Electronics
IEEE Photonics Technology Letters
IEEE Sensors Journal
IEEE Photonic Journal
OSA Optics Letters
OSA Optics Express
Elsevier Optics Communications
Nature Scientific Reports
MDPI Sensors
ETRI Journal

TECHNOLOGY TRANSFER

Co-inventor of the following **patents**:

1. Italian Patent RA2013A000001, filed on January 2013: “Dispostivo Ottico” (2013)
2. European Patent Application P36731 “New Silicon Photonic Add/Drop Switching and Aggregator Architecture with Enhanced Loss and Larger Micro-ring Diameter” (2012)
3. Italian Patent PI2010A136, 2010: “Measurement apparatus protecting the use of hybrid sensor for distributed temperature measurement and dynamic strain measurement” (2010)
4. Italian Patent PI2010A46, 2010: “Measurement apparatus protecting the use of distributed cycling codes technique in Raman distributed sensing” (2010)
5. Italian Patent PI2009A111, 2009: “Measurement apparatus protecting the use of multi-wavelength optical sources within optical fiber sensors based on Brillouin scattering” (2009)
6. Italian Patent RA2008A47, 2008: “Measurement apparatus protecting the use of optical pulse coding within optical fiber sensor systems based on spontaneous Brillouin scattering” (2009)
7. International patent application PCT IT2009/000525, 2009: Measurement apparatus protecting the use of optical pulse coding within optical fiber sensor systems based on stimulated Brillouin scattering (2009)
8. International patent application PCT/IB2008/051126: “Integrated optical waveguide amplifier or laser with rare earth ions and sensitizer elements co-doped core and related optical pumping method” (2008)
9. Italian Patent BI831F: “Amplificatore ottico di segnale o laser a guida d’onda integrato con core drogato con un elemento sensibilizzatore e ioni stimolabili di terre rare e relativo metodo di pompaggio ottico” (2007)
10. Italian Patent BI790F : “Amplificatore ottico di segnale o laser a guida d'onda integrato con core drogato con terre rare e nanocluster di silicio e relativo metodo di pompaggio ottico di detto amplificatore” (2007)
11. US Patent US2008/0297883 A1: “Raman amplifier structure” (2008)
12. US Patent US7417790 B2: “Looped Optical Network with ASE Light Recirculation and Network Survivability Control System” (US Pat. App 10/571,506 - 2004)
13. US Patent US7684111 B2: “Counter-Pumped Distributed Raman Amplifier in Wavelenth Division Multiplexed Optical Communication Systems (US Pat. App 10554193, 2004)
14. US Patent US6646786: “Copropagating Raman pump unit to suppress four-wave mixing
crosstalk between pump modes and WDM signals” (US Pat. 6646786 - 2002)
15. US Patent US6657777: “Interleaved lumped raman amplifier structure based on highly

nonlinear fibers for densely spaced WDM channels" (US Pat. 6657777 - 2001)
16. US Patent US6903863: "Gain flattened bi-directionally pumped Raman amplifier for WDM transmission systems" (US Pat. 6903863 - 2001)
17. US Patent US6798945: "Lumped raman amplifier for adaptive dispersion compensation", (US Pat. 6798945 - 2001)
18. US Patent US6862132: "Suppression of double rayleigh backscattering and pump reuse in a raman amplifier", (US Pat. 6862132 – 2001)
19. US Patent US2001033412: "Optical amplifier and optical transmission system", (US Pat. 6519080 - 2001)
20. US Patent US6961522: "Automatic raman gain and tilt control for ultra-long-distance dense WDM optical communication system", (US Pat. 6961522 - 2000)
21. US Patent US6437906: "All-optical gain controlled L-band EDFA structure with reduced four-wave mixing cross-talk", (US Pat. 6437906 - 2000)
22. US Patent US6603598, "Optical amplifier unit and optical propagation system", (US Pat. 6603598 - 2000)
23. JP2001068772: "Automatically gain controlled multi-wavelength amplifying remote control communication system"
24. US Patent US6556346: "Light-amplifying device and light transmission system", (US Pat. 6556346 - 1999)

Co-founder of Fibersens S.r.l., spin-off comapny of Scuola Superiore Sant'Anna from 20-12-2007 to 28-11-2013

Co-founder of Infibra Technologies S.r.l., spin-off company of Scuola Superiore Sant'Anna from 16-04-2014 to present

LANGUAGES

Mather tongue: Italian
Fluent in English
French

Fabrizio Cesare Filippo Di Pasquale is author or co-author of over 210 papers and of **two book chapters** (97 papers in **leading international peer-reviewed journals**, 86 papers in **peer-reviewed conferences proceedings, more than 116 papers as senior author in last 10 years)**. He has filed 16 **international patents** and 8 **italian patents**.

LIST OF PUBLICATIONS IN REFEREED JOURNALS

Fabrizio Cesare Filippo Di Pasquale

1. Y. Muanenda, S. Faralli, C.J. Oton, C. Cheng, M. Yang, **F. Di Pasquale**, "Dynamic phase extraction in a high-SNR DAS based on UWFBGs without phase unwrapping using a scalable homodyne demodulation in direct detection", Optics Express, Vol. 27, Issue 8, pp. 10644-10658 (2019), doi : https://doi.org/10.1364/OE.27.010644.
2. F. Barone, A. Signorini, L. Ntibarikure, T. Fiore, **F. Di Pasquale**, C.J. Oton, "Fiber-optic liquid level sensing by temperature profiling with an FBG array", Sensors (Basel). 2018 Aug; 18(8): 2422. Published online 2018 Jul 25. doi: 10.3390/s18082422
3. C. L. Manganelli, *P. Velha*, P. Pintus, F. Gambini, O. Lemonnier, C. Kopp, S. Faralli, **F. Di Pasquale** and C. J. Oton, "Low Power Consumption Integrated Tunable Filters for WDM Switching Applications in Silicon Photonics", to be published in IEEE Photonics Technology Letters.
4. Y. Marin, V. Toccafondo, P. Velha, S. Scarano, S. Tirelli, A. Nottola, Y. Jeong, H. P. Jeon, M. Minunni, **F. Di Pasquale**, C. J. Oton, "Silicon photonic biochemical sensor on chip based on interferometry and phase-generated-carrier demodulation", to be published in IEEE Journal of Selected Topics in Quantum Electronics, Special Issue on Biophotonics.
5. Y. E. Marin, T. Nannipieri, C. J. Oton, **F. Di Pasquale**, "Current status and future trends of photonic integrated FBG interrogators", IEEE/OSA Journal of Lightwave Technology, Volume: 36, Issue: 4, Feb.15, 15 2018 special issues OFS-25.

6. Y. Muanenda, S. Faralli, C.J. Oton, **F. Di Pasquale**, "Dynamic phase extraction in a modulated double-pulse φ-OTDR sensor using a stable homodyne demodulation in direct detection", Vol. 26, No. 2 | 22 Jan 2018, Optics Express 687.
7. Y. E. Marin, T. Nannipieri, C. J. Oton, and **F. Di Pasquale**, "Integrated FBG Sensors Interrogation using Active Phase Demodulation on a Silicon Photonic Platform", IEEE/OSA Journal of Lightwave Technology, Vol. 35, No. 16, August 15, 2017.
8. I. Toccafondo, Y. E. Marin, E. Guillermain, J. Kuhnhenn, J. Mekki, M. Brugger , and **F. Di Pasquale**, "Distributed Optical Fiber Radiation Sensing in a Mixed-Field Radiation Environment at CERN", IEEE/OSA Journal of Lightwave Technology, Vol. 35, No. 16, August 15, 2017.
9. F. Testa, C. J. Oton, C. Kopp, Jong-Moo Lee, R. Ortuño, R. Enne, G. Chiaretti, S. Tondini, A. Bianchi, Min-su Kim, D. Fowler, J. Ayucar, M. Hofbauer, P. Pintus, M. Mancinelli, M. Fournier, G. B. Preve, N. Zecevic, C. Manganelli, C. Castellan, G.l Pares, L. Pavesi, O. Lemonnier, F. Gambini, P. Labeye, M. Romagnoli, H. Zimmerman, **F. Di Pasquale**, S. Stracca, "Design and Implementation of an Integrated Reconfigurable Silicon Photonics Switch Matrix in IRIS Project", IEEE Journal of Selected Topics in Quantum Electronics, Vol. 22, No. 6, November/December 2016.
10. S. Faralli, F. Gambini, P. Pintus, M. Scaffardi, O. Liboiron-Ladouceur, Y. Xiong, P. Castoldi, **F. Di Pasquale**, A. Andriolli, I. Cerutti, "Bidirectional Transmission in an Optical Network on Chip with Bus and Ring Topologies", IEEE Photonics Journal, Vol. 8, No. 1, February 2016.
11. Y. Muanenda, C. J. Oton, S. Faralli, T. Nannipieri, A. Signorini, **F. Di Pasquale**, "A distributed acoustic and temperature sensor using a commercial off-the-shelf DFB laser", Optics Letters, Vol. 41, No. 3, February 2016.
12. Y. Muanenda, C. J. Oton, S. Faralli, **F. Di Pasquale** "A cost-effective distributed acoustic sensor using a commercial off-the-shelf DFB laser and direct detection phase-OTDR", IEEE Photonics Journal, Vol. 8, Issue 1, February 2016.
13. P. Pintus, F. Gambini, S. Faralli, F. Di Pasquale, I. Cerutti, N. Andriolli, "Ring vs. Bus: a Theoretical and Experimental Comparison of Photonic Integrated NoC", IEEE/OSA Journal of Lightwave Technology, Vol. 33, No. 23, December 1, 2015.
14. Y. Muanenda, M. Taki, T. Nannipieri, A. Signorini, C. J. Oton, F. Zaidi, I. Toccafondo, **F. Di Pasquale**, "Advanced Coding Techniques for Long-Range Raman/BOTDA Distributed Strain and Temperature Measurements", IEEE/OSA Journal of Lightwave Technology, Issue 99, October 2015.
15. I. Toccafondo, T. Nannipieri, A. Signorini, E. Guillermain, J. Kuhnhenn, M. Brugger and **F. Di Pasquale**, "Raman Distributed Temperature Measurement at CERN High energy AcceleRator Mixed field facility (CHARM)", IEEE Photonics Technology Letters, Vol. 27, No. 20, pp. 2182-2185, October 15, 2015.
16. M. Taki, Y. Muanenda, I. Toccafondo, A. Signorini, T. Nannipieri and **F. Di Pasquale**, "Optimized Hybrid Raman/Fast-BOTDA Sensor for Temperature and Strain Measurements in Large Infrastructures", IEEE Sensors Journal, Vol. 14, No. 12, Dec 2014.
17. M. Taki, Y. Muanenda and **F. Di Pasquale, "**Long-Range Accelerated BOTDA Sensor Using Adaptive Linear Prediction and Cyclic Coding", September 15, 2014 / Vol. 39, No. 18 / Optics Letters.
18. M. Taki, M.A. Soto, **F. Di Pasquale**, G. Bolognini, "Differential Pulse-Width Pair Brillouin Optical Time-Domain Analysis Employing Raman Amplification and Optical Pulse Coding", Sensors and Microsystems, Lecture Notes in Electrical Engineering, Vol 268, 2014, pp. 251-254, Springer International Publishing.
19. M. Taki, A. Signorini, C. J. Oton, T. Nannipieri, **F. Di Pasquale**, "Hybrid Raman/BOTDA Distributed Optical Fiber Sensors based on Cyclic Pulse Coding", Optics Letters Vol. 38, Iss. 20, pp. 4162–4165 (2013).
20. P. Pintus, P. Contu, N. Andriolli, A. D'Errico, **F. Di Pasquale**, F. Testa, "Analysis and Design of Micro-Ring Based Switching Elements in a Silicon Photonic Integrated Transponder Aggregator", IEEE/OSA Journal of Lightwave Technology, Special Issue on Optical Interconnects, vol. 31, no. 24, Dec. 15, 2013.
21. P. Pintus, N. Andriolli, **F. Di Pasquale**, J. E. Bowers "Bidirectional Crosstalk and Back-reflection Free WDM Active Optical Interconnects", IEEE Photonics Technology Letters, Vol. 25, Issue 20, pp. 1973 – 1976 (2013).
22. M. Taki, Y. Muanenda, C. J. Oton, T. Nannipieri, A. Signorini, **F. Di Pasquale**, "Cyclic Pulse Coding for Fast BOTDA Fiber Sensors", Optics Letters Vol. 38, Iss. 15, pp. 2877–2880 (2013).
23. M. Taki, M. A. Soto, G. Bolognini, **F. Di Pasquale**, "Study of Raman amplification in DPP-BOTDA sensing employing Simplex coding for sub-meter scale spatial resolution over long fiber distances", Measurement Science and Technology, Volume 24, Issue 9, article id. 094018 (2013).
24. Md. S. M. Sher, P. Pintus, **F. Di Pasquale**, "Numerical study of novel high-index-contrast Er:$LiNbO_3$ photonic wire lasers optically pumped at 980nm", Applied Optics Vol. 52, Iss. 19, pp. 4438–4445 (2013).
25. P. Pintus, **F. Di Pasquale**, J.E. Bowers, "Integrated TE and TM optical circulators on ultra-low-loss silicon nitride platform", Optics Express, Vol. 21, Issue 4, pp. 5041-5052 (2013).
26. F. Zaidi, T. Nannipieri, A. Signorini, M. Taki, V. Donzella, **F. Di Pasquale**, "High Performance Time Domain FBG Dynamic Interrogation Scheme Based on Pulse Coding", IEEE Photonic Tech. Letters, Vol. 25, Issue 5, March.1, 2013.

27. M. Taki, F. Zaidi, I. Toccafondo, T. Nannipieri, A. Signorini, S. Faralli, **F. Di Pasquale**, "High performance hybrid Raman/FBG fiber optic sensor based on Simplex cyclic pulse coding", February 15, 2013 / Vol. 38, No. 4 / Optics Letters.
28. M. Taki, T. Nannipieri, F. Zaidi, A. Signorini, **F. Di Pasquale**, 'Hybrid Optical Fiber Sensor for Simultaneous Dynamic FBG Interrogation and Distributed Static Strain/Temperature Measurements', Electronics Letters, Volume 48, issue 24, 22 November 2012, p. 1548 – 1550.
29. I. Toccafondo, M. Taki, A. Signorini, F. Zaidi, T. Nannipieri, S. Faralli, and **F. Di Pasquale**, "Hybrid Raman/FBG Sensor for Distributed Temperature and Discrete Dynamic Strain Measurements", Optics Letters, Vol. 37 Issue 21, pp.4434-4436 (2012).
30. F. Zaidi, T. Nannipieri, M.A. Soto, A. Signorini, G. Bolognini, **F. Di Pasquale**, "Integrated Raman/FBG interrogation scheme for distributed temperature and point dynamic strain measurements", Applied Optics, Vol. 51 Issue 30, pp.7268-7275 (2012).
31. M. A. Soto, M. Taki, G. Bolognini, **F. Di Pasquale,** "Simplex-Coded BOTDA Sensor Over 120 km SMF with 1 m Spatial Resolution Assisted by Optimized Bidirectional Raman Amplification", IEEE Photonic Tech. Letters, **Vol.** 24, Issue 20, Oct.15, 2012.
32. M. A. Soto, M. Taki, G. Bolognini, **F. Di Pasquale,** "Optimization of a DPP-BOTDA sensor with 25 cm spatial resolution over 60 km standard single-mode fiber using Simplex codes and optical pre-amplification, 26 March 2012 / Vol. 20, No. 7 / OPTICS EXPRESS 6860.
33. M.A. Soto, A. Signorini, T. Nannipieri, S. Faralli, G. Bolognini, **F. Di Pasquale,** "Impact of Loss variations on Double-Ended Distributed Temperature Sensors Based on Raman Anti-Stokes Signal Only", IEEE/OSA Journal of Lightwave Technology, Vol. 30, No. 8, April 15, 2012, invited paper.
34. P. Pintus, **F. Di Pasquale**, J.E. Bowers, "Design of TE ring isolators for ultra low loss Si_3N_4 waveguides based on the finite element method", Optics Letters, Vol. 36 Issue 23, pp.4599-4601, December 1, (2011).
35. M.A. Soto, T. Nannipieri, A. Signorini, A. Lazzeri, F. Baronti, R. Roncella, G. Bolognini, **F. Di Pasquale**, "Raman-based distributed temperature sensor with 1 m spatial resolution over 26 km SMF using low-repetition-rate cyclic pulse coding", Optics Letters, Vol. 36, Issue 13, pp. 2557-2559 (2011).
36. P. Pintus, S. Faralli, **F. Di Pasquale**, "Integrated 2.8 μm laser source $Al_2O_3:Er^{3+}$ slot waveguide on SOI", IEEE/OSA Journal of Lightwave Technology, Vol. 29, No. 8, pp.1206-1212, 2011.
37. S. M. Sher, P. Pintus, **F. Di Pasquale**, M. Bianconi, G. B. Montanari, P. De Nicola, S. Sugliani, G. Prati, "Design of 980nm-Pumped Waveguide Laser for Continuous Wave Operation in Ion Implanted Er:LiNbO3", IEEE Journal of Quantum Electronics, Vol. 47, No. 4, April 2011, pp. 526-533.
38. M. A. Soto, G. Bolognini, **F. Di Pasquale, "**Optimization of long-range BOTDA sensors with high resolution using first-order bi-directional Raman amplification", 28 February 2011 / Vol. 19, No. 5 / Optics Express 4444.
39. M. A. Soto, G. Bolognini, **F. Di Pasquale**, "Long-range Simplex coded BOTDA sensors over 120 km, distance employing optical pre-amplification", Optics Letters, Vol. 36, No. 2, January 15, 2011.
40. P. Pintus, S. Faralli, **F. Di Pasquale**, "Low Threshold Pump Power and High Integration in $Al_2O_3:Er^{3+}$ Slot Waveguide Lasers on SOI", IEEE Photonics Technology Letters, Vol. 22, No. 19, October 2010.
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