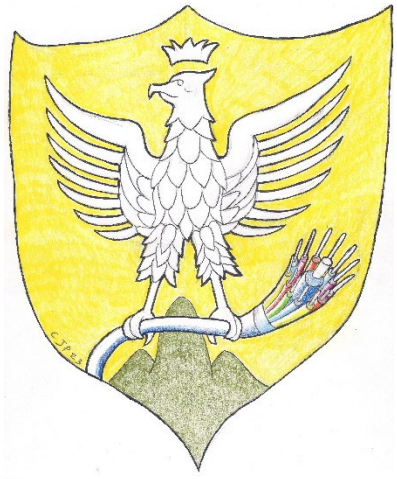
International workshop on space-di**Visi**on mul**t**iplexed transmission in optical fibers: **A**dvances and re**Q**uirements (Visit-AQ)

University of L'Aquila, L'Aquila, Italy

CNIT National Laboratory of Advanced Optical Fibers for Photonics (FIBERS)

Palazzo Camponeschi, Piazza Santa Margherita 2

September 21-23, 2023



A joint event in the framework of projects INCIPCT and FIRST

PROGRAM CHAIRS

Cristian Antonelli*, University of L'Aquila and CNIT National Laboratory FIBERS*

Antonio Mecozzi, *University of L'Aquila and CNIT National Laboratory FIBERS*

SCIENTIFIC COMMITTEE

Luca Palmieri, *University of Padova and CNIT National Laboratory FIBERS*

Andrea Carena, *Politecnico di Torino and CNIT National Laboratory FIBERS*

Paola Parolari, *Politecnico di Milano and CNIT National Laboratory FIBERS*

Paolo Serena, *University of Parma and CNIT National Laboratory FIBERS*

Nicola Sambo, *Scuola Superiore Sant'Anna and CNIT National Laboratory FIBERS*

Program: THURSDAY, SEPTEMBER 21

12:00 – 14:00 Registration

A light lunch is offered during the registration.

14:00 – 16:00 Session 1.1 (Chaired by Cristian Antonelli, University of L'Aquila)

Welcome and opening remarks

Keynote presentation: **Roland Ryf**, *Nokia Bell Labs, USA,* "SDM: Where do we go from here?"

Pierre Sillard, *Prysmian Group, France*, "Not-so-few-mode fiber technology"

Georg Rademacher, *University of Stuttgart, Germany*, "Transmission in high-mode-count fibers"

Filipe Ferreira, *University College London, United Kingdom*, "Challenges and opportunities in scaling up multimode SDM transmission capacity"

16:00 – 16:30 Coffee break

16:30 – 19:00 Session 1.2 (Chaired by Antonio Mecozzi, University of L'Aquila)

Tetsuya Hayashi, *Sumitomo Electric, Japan*, "Multicore Fiber Technology Progress Toward Practical Deployment"

Tiago Alves, *University Institute of Lisbon, Portugal*, "Characterization of the intercore crosstalk in weakly-coupled multicore fiber systems"

Chiara Lasagni, *University of Parma, Italy,* "Effect of Mode Dispersion on the Nonlinear Interference Noise in SDM Transmissions"

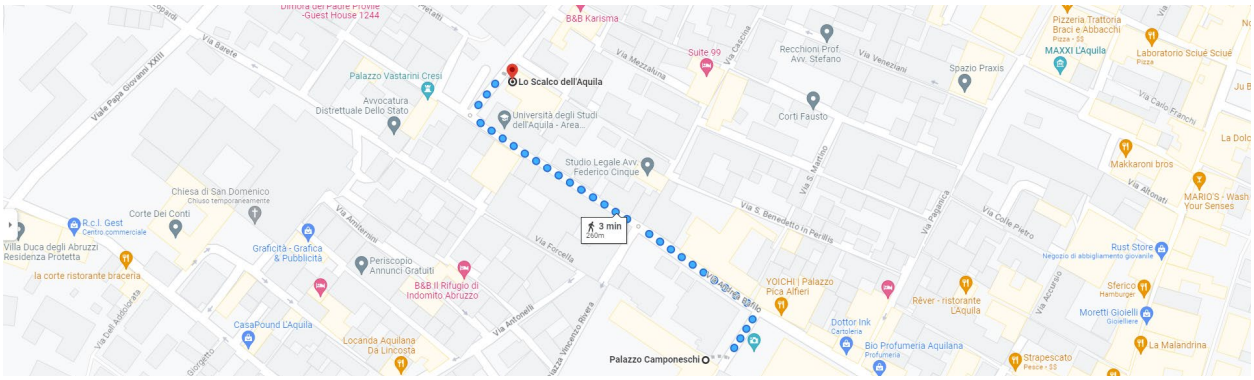
Davide Bacco, *University of Florence, Italy,* "Towards a multidimensional quantum internet"

Nicola Sambo, *Scuola Superiore Sant'Anna, Italy,* "SDM networking"

Ruben Luis, *NICT, Japan*, "Experimental implementation of SDM networks elements using multicore or multimode fibers"

20:30 – 23:00 Social dinner

The social dinner will take place at the restaurant ***Lo Scalco dell'Aquila***, located at a distance of 260 meters from the workshop venue.



The wait for the social dinner is a good time to visit the city center and relax in local bars. It is recommended to stay away from food in view of the abundant dinner…

Program: FRIDAY, SEPTEMBER 22

08:00 – 10:00 Session 2.1 (Chaired by Mark Shtaif, Tel Aviv University, Israel)

Mikael Mazur, *Nokia Bell Labs, USA*, "Insights and open questions from characterization of field-deployed SDM fibers"

Peter Krummrich, *Technical University of Dortmund, Germany*, "Impact of forward Rayleigh scattering on crosstalk in mode multiplexed" transmission

Kazuhide Nakajima, *NTT Corporation, Japan*, "Recent Progress on SDM Optical Fibre Research in Japan"

Colja Schubert, *Fraunhofer Heinrich Hertz Institute, Germany,* "Coherent Transport Research at Fraunhofer-HHI for Future 6G Networks"

Dan Marom, *Hebrew University of Jerusalem, Israel,* "PIC-based 1×N Flexible WaveBand-Selective Switch"

Yuta Wakayama, *KDDI Research, Japan*, "Deployed cable facility and trials of multicore fibre transmission in KDDI Research"

10:00 – 10:30 Coffee break

10:30 – 13:00 Session 2.2 (Chaired by Lauren Dallachiesa, Nokia Bell Labs, USA)

Menno Van Den Hout, *Eindhoven University of Technology, The Netherlands*, "Long-distance transmission using multi-mode fibers"

Metodi Yankov, *Technical University of Denmark, Denmark* , "Nonlinear precoding for IM-DD short-reach few-mode fiber transmission"

Paola Parolari, *Politecnico di Milano, Italy*, "Mode group division multiplexing: challenges and opportunities"

Lars Gruner Nielsen, *Technical University of Denmark, Denmark*, "IM-DD mode division multiplexing on standard multimode fibers using photonic lanterns"

Arnaud Rigny, *Cailabs, France*, "Multi Plane Light Conversion Based Mode Multiplexer for SDM applications"

13:00 – 14:30 Lunch break

A light lunch is provided at the workshop venue premises.

14:30 – 19:30 Visit to the National Laboratories of Gran Sasso (LNGS)

Gran Sasso National Laboratory (LNGS) is the largest underground laboratory in the world devoted to neutrino and astroparticle physics, a worldwide research facility for scientists working in this field of research, where particle physics, cosmology and astrophysics meet. It is unequalled anywhere else, as it offers the most advanced underground infrastructures in terms of dimensions, complexity and completeness.

The visit includes a video presentation and a guided tour of the underground labs. A round-trip bus ride has been pre-arranged and details will be provided during the workshop.

Program: SATURDAY, SEPTEMBER 23

08:30 – 13:00 Visit of the Abruzzo Observatory and hike

The station is a remote site of Abruzzo Astronomical Observatory located at Campo Imperatore, in the heart of the Italian Appennino, at 2200 m above the sea level.

The visit includes a short presentation of the station and is followed by a hike to the nearest Gran Sasso peak. A round-trip bus ride has been pre-arranged and details will be provided during the workshop.

Closing remarks at the workshop premises.