

## SUNDAY AUGUST 25<sup>TH</sup>

15.30 – 18.30 Registration  
19.30 – 21.30 Welcome Cocktail – Swimming pool  
19.30 – 22.30 Live Music

## MONDAY AUGUST 26<sup>TH</sup>

08.45 – 09.00 Opening remarks (P. De Natale, M.S. Vitiello, B. Williams)

### ***School Session I***

Chair: Miriam S. Vitiello (CNR-NANO, Italy)

09.00 – 09.50 ***Tutorial*** Edmund Linfield (University of Leeds, UK) “*Molecular Beam Epitaxial Growth of Quantum Cascade Lasers – the Challenges and the Rewards*”

09.50 – 10.40 ***Tutorial*** Carlo Sirtori (Ecole Normale Supérieure, France) “*Frequency modulated optical combs in quantum cascade lasers*”

10.40 – 11.00 Coffee break – Swimming pool

### ***School Session II***

Chair: Benjamin Williams (UCLA, USA)

11.00 – 11.50 ***Tutorial*** Karl Unterrainer (Technical University Wien, Austria) “*From Metasurfaces to Random Cavities for THz QCLs*”

11.50 – 12.40 ***Tutorial*** Sukhdeep Dhillon (Ecole Normale Supérieure, France) “*Layered Controlled Terahertz Photonics with 2D Transition Metal Dichalcogenides*”

12.50 – 15.00 Lunch break (Restaurant Continental Hotel) & Free time

### ***School Session III***

Chair: Giles Davies (University of Leeds, UK)

15.00 – 15:50 ***Tutorial*** Qijie Wang (Nanyang Technological University, Singapore) “*Advanced Mid-Infrared Detectors*”

15:50 – 16:05 L. Del Balzo (Ecole Normale Supérieure, France): “*Stark modulator for mid-infrared coherent detection*”

16.05 – 16.20 A.M. Andrews (Technical University of Wien, Austria): “*InAs/AlSb-based Quantum Cascade Detectors*”

16.20 – 18.20 Coffee break (Nitrodi Room) **Poster session I & Industrial Exhibition**

19.30 Free Dinner

## TUESDAY AUGUST 27<sup>TH</sup>

### **School Session IV**

Chair: Carlo Sirtori (Ecole Normale Supérieure, France)

08.30 – 09.20 **Tutorial** Christian Jirauschek (Technical University of Munich, Germany)

*“Quantum Opto- and Microwave-Electronic Modeling of Quantum Cascade Laser Dynamics”*

09.20 – 10.10 **Tutorial** Gaetano Scamarcio (CNR-Nano and University of Bari, Italy) *“Optical feedback interferometry in quantum cascade lasers”*

10.10 – 10.25 R.R. Bhuckory (Princeton University, USA) *“Optical Feedback in Quantum Cascade Ring Laser Systems”*

10.25 – 10.40 B. Williams (UCLA, USA) *“Self-mixing phenomena in THz metasurface QC-VECSELS”*

10.40 – 11.10 Coffee break – Swimming pool

### **Workshop**

#### **Session I: Frequency Combs I**

Chair: Qing Hu (MIT, USA)

11.10 – 11.40 **Keynote** Konstantin L. Vodopyanov (CREOL, Univ. of Central Florida, USA), *“Frequency Comb Spectroscopy from 1 THz to 1 PHz”*

11.40 – 12.10 **Invited** Jerome Faist (ETH Zurich, Switzerland) *“30 years Quantum cascade lasers: THz emitter and detector, low dissipations and combs”*

12.10 – 12.25 J. Khurgin (Johns Hopkins University, Baltimore, USA) *“Internal” and “External” Frequency combs. Comparing efficiency, bandwidth, and noise.*

12.25 – 12.40 B. Schneider (ETHZ, Switzerland) *“Strongly Confined Intensity Pulsations in Linearly Chirped FM Combs”*

12.40 – 13.05 F. Cappelli (CNR-INO, Italy) *“Free-space optical communication with a QCL frequency comb”*

13.05 – 13.20 R. Strieder (Technical University of Wien, Austria) *“Frequency comb spectral engineering in semiconductor lasers by intracavity spatial intensity profile shaping”*

13.20 – 15.15 Lunch break (Restaurant Continental Hotel) & Free time

#### **Session II: Structured Materials and Structured Light**

Chair: Martin Fejer (Stanford University, USA)

15.15 – 15.45 **Invited** Federico Capasso (Harvard University, USA) *“Flat Optics: From structured light to mass manufacturing”*

15.45 – 16.00 M. Gallego (Princeton University, USA) *“Disordered Hyperuniform Semiconductor Computational Metamaterials in the Mid-Infrared”*

16.00 – 16.15 Y. Hu (Shanxi University, Taiyuan, China) *“Unconventional Quantum Optics through Engineered Non-Hermiticity”*

16.15 – 16.40 Coffee break & **Exhibition** (Nitrodi Room)

### Session III: 2D Materials

Chair: Rupert Huber (University of Regensburg, Germany)

16.40 – 17.10 **Keynote** Frank Koppens (ICFO, Spain) “*Quantum nano-optoelectronics of twisted 2D materials*”

17.10 – 17.25 L. Viti (CNR-NANO, Italy) “*Quantum Cascade Laser Based Scattering Type Scanning Near-Field Terahertz Microscope*”

17.25 – 17.40 E. Riccardi (CNR-NANO, Italy) “*Real time measure of the lattice temperature of a terahertz quantum cascade laser with an integrated graphene thermistor*”

17.40 – 17.55 S.M.A. Sarfraz (University of Bari, Italy) “*Monolithic electrolyte-gated graphene chip for amplitude modulation, saturable absorption, and frequency tuning in the 2-5 THz band*”

18.00 – 19.30 **Poster session II & Exhibition** (Nitrodi Room)

20.30: Free Dinner

## WEDNESDAY AUGUST 28<sup>TH</sup>

### Session IV: Light-matter interaction phenomena

Chair: Frank Koppens (ICFO, Spain)

08.30 – 09.00 **Keynote** Rupert Huber (University of Regensburg, Germany) “*Shaping Electronic Quantum Trajectories with Tailored Terahertz and Mid-Infrared Lightwaves*”

09.00 – 09.15 S. Bonetti (University of Venice, Italy) “*Terahertz electric-field-driven emergent orders in matter: an opportunity for quantum cascade lasers*”

09.15 – 09.30 A. De Vetter (Ecole Normale Supérieure, France) “*Cavity based photoconductive antennas for coherent detection of THz QCLs*”

### Session V: Integrated mid-IR sources

Chair: Gaetano Scamarcio (University of Bari, Italy)

09.30 – 10.00 **Invited** Mikhail Belkin (Technical University of Munich, Germany) “*Mid-Infrared Photonic Integration on InP*”

10.00 – 10.15 M. Montesinos-Ballester (ETHZ, Switzerland) “*Monolithic integration of quantum cascade lasers in a low-loss, broadband, InP-based platform*”

10.15– 10.30 D. Burghart (Technical University of Munich, Germany) “*Monolithic integration and multiplexing of distinct quantum cascade laser active regions on the same InP crystal*”

10.30 – 10.50 Coffee break – Swimming pool

### Session VI: Quantum devices

Chair: Jerome Faist (ETHZ, Switzerland)

10.50 – 11:20 **Invited** Manijeh Razeghi (Northwestern University, USA) “*From tool to product, Quantum cascade laser: a thirty-years adventure*”

11.20 – 11.40 **Invited** D. Botez (University of Wisconsin Madison, USA) “*New Insights Reached via Graded-Interfaces Modeling: How High-Power, Record-Efficiency Mid-IR QCLs Work*”  
11.40 – 11.55 J. Fuchsberger (Technical University of Wien, Austria) “*Quantum/Interband Cascade Devices with switchable laser and superluminescent operation mode*”  
11.55 – 12.10 M. Mastrangelo (Ecole Normale Supérieure, France) “*QC emitter with patch-antenna metamaterial*”  
12.10 – 12.25 D. Piciocchi (ETHZ, Switzerland) “*Synthetic Lattice with Artificial Magnetic Flux in a Fast Gain Laser*”

### **Session VII: Polaritons**

Chair: Gottfried Strasser (TU Wien, Austria)

12:25 – 12.45 **Invited** Adel Bousseksou (University of Paris Sud, France) “*10 GHz mid-IR modulator based on ultra-fast electrical switching of the light-matter coupling*”  
12:45 – 13.00 M. Gambelli (CNR-IFN, Italy) “*Microcavities patch antenna array for enhanced light matter coupling in Ge/SiGe material platform*”  
13.00 – 13.15 S. Stich (Technical University of Munich, Germany) “*Inverse Design of an All-Dielectric Polaritonic Nonlinear Metasurface*”  
13.15 – 13.30 J. Krakofsky (Technical University of Munich, Germany) “*Continuous-wave terahertz difference-frequency generation from intersubband polaritonic metasurface*”

13.30 – 15:30 Lunch break (Restaurant Continental Hotel) & Free time

15:30 – 19:00

Excursion (guided tour to Castello Aragonese) & beach time

20:00 Conference Banquet with music exhibition – Ristorante del Parco, Continental Hotel

## **THURSDAY AUGUST 29<sup>TH</sup>**

### **Session VIII: Frequency combs II**

Chair: Konstantin Vodopyanov (CREOL-Central Florida University, USA)

08.30 – 09.00 **Keynote** Michal Lipson (Columbia University, USA) “*High Q tunable on-chip cavities in the mid-IR for on-chip lasers*”  
09.00 – 09.30 **Invited** Qing Hu (MIT, USA) “*Broadband LWIR frequency combs and traveling-wave THz amplifiers*”  
09.30 – 09.45 H. Li (Shanghai Institute of Microsystems and Information Technology, China) “*Hybrid Locking of Terahertz Quantum Cascade Laser Dual-Comb Sources*”  
09.45 – 10.00 L. Seitner (Technical University of Munich, Germany) “*Modeling Harmonic Frequency Combs in THz QCLs: Semi-Classical and Quantum Aspects*”

10.00– 10.25 Coffee break – Swimming pool

10.25 – 10.40 M. Justo Guerrero (CNR-NANO, Italy) “*Engineering high power/mode harmonic frequency combs in semiconductor heterostructure THz lasers*”

- 10.40 – 10.55 U. G. Scalari (ETHZ, Switzerland) “*Sub-harmonic comb generation in strongly RF-modulated planarized THz quantum cascade lasers*”
- 10.55 – 11.10 M Jaidl (Technical University of Wien, Austria) “*Quantum Beats at Room Temperature: Unleashing the Power and Precision of High-Power Terahertz Ring Lasers in Frequency Comb Symphony*”
- 11.10 – 11.25 E. Riccardi (CNR-NANO, Italy) “*Purely second order harmonic comb ring QCLs: optical, electronic, thermal properties and laser feedback interferometry*”

### **Session IX: Applications I**

Chair: Michal Lipson (Columbia Univ., USA)

- 11.25 – 11.55 *Invited* Wei Ren (The Chinese University of Hong Kong, China) “*Mid-infrared trace gas detection enhanced by optical cavity and hollow-core fiber*”
- 11.55 – 12.10 R. Voigt (Humboldt University Berlin and DLR, Germany) “*High-resolution cryogen-free spectroscopy with a phase-locked terahertz quantum-cascade laser*”
- 12.10 – 12.25 D. Wen (The Chinese University of Hong Kong, China) “*Mid-infrared Absorption Gas Sensor using a Flexible Hollow Core Fiber and QCLs with Intermittent Operation*”
- 12.25 – 12.40 S. Dello Russo (CNR-INO, Italy) “*Performance investigation of silicon-based Micro-Electromechanical systems for QCL-based photoacoustic spectroscopy*”
- 12.40 – 12.55 P. Patimisco (University of Bari, Italy) “*The impact of Quantum Cascade Laser on Quartz Enhanced Photoacoustic Spectroscopy: the state-of-the-art and beyond*”
- 12.55 – 13.10 C. Jacquemin (Université de Reims Champagne-Ardenne, CNRS, France) “*A Novel Stabilization System of Quantum Cascade Laser Sources For Photoacoustic Gas Detection*”

13.10 – 14:45: Lunch break (Restaurant Continental Hotel) & Free time

### **Session X: Innovative far-infrared sources**

Chair: Manijeh Razeghi (Northwestern University, USA)

- 14.45 – 15:05 *Invited* Alessandra Di Gaspare (CNR-NANO, Italy) “*Miniaturized terahertz sources in the Reststrahlen band exploiting quantum cascade laser-induced frequency up-conversion in graphene*”
- 15.05 – 15.20 A. Invernici (Technical University of Wien, Austria) “*Geometry dependence in THz quantum cascade random lasers*”
- 15.20 – 15.35 V. Digiorgio (ETHZ, Switzerland) “*On-chip Inverse-designed WDM Integrated With Surface Emitting THz Quantum Cascade Laser*”
- 15.35 – 15.50 S. Barbieri (CNRS and University of Lille, France) “*Room-temperature continuous-wave Terahertz generation with an intersubband mid-infrared photomixer*”
- 15.50 – 16.05 A. Wright (Ecole Normale Supérieure, France) “*Spintronic Terahertz Emitters with Integrated Metallic Terahertz Cavities*”

16.05 – 16.25 Coffee break & Exhibition (Nitrodi Room)

### Session XI: Frequency combs III

Chair: Karl Unterrainer (Technical University of Wien, Austria)

16.25 – 16.55: *Invited* Lorenzo Columbo (Politecnico di Torino, Italy) “*Solitary Structures and Optical Frequency Combs in Quantum Cascade Lasers*”

16.55 – 17.15 *Invited* Theodore P. Letsou (Harvard University, USA) “*Solitons in Active Nonlinear Integrated Photonics*”

17.15– 17.35 *Invited* Ina Heckelmann (ETHZ, Switzerland) “*Spectral shaping of Quantum Walk Combs*”

17.35 – 17.50 A. Cargioli (ETHZ, Switzerland) “*Quantum Walk Laser emitting at 4.5 μm: Towards a Double Waveguide Integration*”

17.50 – 18.05 L. Consolino (CNR-INO, Italy) “*THz frequency metrology*”

### Session XII: Quantum cascade laser materials

Chair: Edmund Linfield (Leeds University, UK)

18.05 – 18.20 A. Albo (Bar-Ilan University, Israel) “*Investigating the impact of molecular beam epitaxy growth properties on the temperature performance of cutting-edge terahertz quantum cascade lasers*”

18.20 – 18.35 M. Beck (ETHZ, Switzerland) “*Growth of QCLs on (N11) A InP and GaAs substrates*”

18.35 – 18.50 E. De Toma (Technical University of Munich, Germany) “*GaAs<sub>0.51</sub>Sb<sub>0.49</sub> on InP: a novel highly nonlinear mid-infrared waveguiding platform*”

### Celebrations for the 30-year anniversary of QCLs

19:45 Traditional Show – Garden, Continental Hotel

### 20.15 Special dinner with music concert: Happy Birthday QCL!

Hotel Continental – “Ristorante del Parco”

## FRIDAY AUGUST 30<sup>TH</sup>

### Session XIII: Non-linear photonics and optical communications

Chair: Alexander Gaeta (Columbia University, USA)

08.30 – 09.00 *Keynote* Martin M. Fejer (Stanford University, USA) “*Nonlinear Nanophotonics in Thin-Film Lithium Niobate*”

09.00 – 09.20 *Invited* H. Dely (Ecole Normale Supérieure, France) “*Metamaterial unipolar quantum devices for over 60 Gbits/s free space optical communications links at 10 μm wavelength*”

09.20 – 09.35 E. Linfield (University of Leeds, UK) “*The design and optimization of terahertz frequency quantum cascade lasers for application in high bandwidth terahertz communications systems*”

09.35 – 09.50 A. Sorigi (CNR-INO, Italy) “*THz Wireless Communication Link: Harnessing Quantum Cascade Laser Technology*”

09.50 – 10.20 Coffee break – swimming pool

#### **Session XIV: Design, modelling and dynamics in QCL and interband cascade lasers**

Chair: Lorenzo Columbo (Politecnico di Torino, Italy)

10.20 – 10.35 A. Dikopoltsev (ETHZ, Switzerland) “*Photonic simulator in synthetic space with fast-gain dynamics*”

10.35 – 10.50 A. Demic (University of Leeds, UK) “*QCLopt: Toolkit for design, scaling and optimization of THz Quantum Cascade Lasers: multimillion sweep of prospective room temperature performance devices*”

10.50 – 11.05 M.A. Schreiber (Technical University of Munich, Germany) “*Modeling of RF-Modulated Metasurface Quantum Cascade External Cavity Lasers*”

11.05 – 11.20 T. Grange (Nextnano, Germany) “*Improving the non-equilibrium Green’s function simulation of QCLs through an accurate modeling of the non-radiative scattering processes*”

11.20 – 11.35 A. Correa Hernandez (Princeton University, USA) “*Quantum Cascade Laser Design Optimization Using Machine Learning Combined with a Genetic Algorithm*”

#### **Session XV: Advanced characterization of QCL and interband cascade lasers**

Chair: Qijie Wang (Nanyang Technological University, Singapore)

11.35 – 11.50 I. La Penna (CNR-INO, Italy) “*Noise transfer in quantum- and interband cascade lasers*”

11.50 – 12.05 F. Pilat (Technical University of Wien, Austria) “*Fast gain dynamics in interband cascade lasers*”

12.05 – 12.20 S. Borri (CNR-INO, Italy) “*Frequency noise analysis and stabilization of Cascade Lasers*”

12.20 – 12.35 T. Gabbrielli (CNR-INO, Italy) “*Intensity noise performances of mid-infrared cascade lasers*”

12.35 – 12.50 A. Villalobos-Meza (University of Central Florida, USA) “*Damage Analysis of Long Wave Quantum Cascade Lasers*”

12.50 – 14.30 Lunch break (Restaurant Continental Hotel) & Free time

#### **Session XVI: Applications II & Industrial Session**

Chair: Erich Gornik (Technical University of Wien, Austria)

14.30 – 15.00 **Invited** Borislav Hinkov (Institute of Solid-State Electronics, TU Wien, Austria) “*MIR Photonic Integrated Circuits: Liquid Sensing & Telecom*”

15.00 – 15.20 **Invited** Mathieu Carras (III-V labs, France) “*InAs-based QCLs – state of the art and applications*”

15.20 – 15.40 **Invited** Martin Wienold (German Aerospace Center, Germany): “*Performance of the 4.7-THz quantum-cascade laser in the balloon-borne OSAS-B heterodyne spectrometer*”

15.40 – 15.55 M.C. Ertl (Technical University of Wien, Austria) “*Integrated Micromachined Hollow Waveguides with THz Quantum Cascade Lasers*”

15.55 – 16.10 R. Weih (NanoPlus, Germany): “*Recent developments in Quantum and Interband Cascade Lasers for Spectroscopic Applications*”

16.10 – 16.25 A. Cernescu (Neaspec) “*Infrared nanoscopy on materials using s-SNOM and QCLs*”

16.25 – 16.40 A. Detti (ppqSense) “State-of-the-art electronics for high-precision and high-sensitivity spectroscopy”

**Session XV: Thematic session on Photonics**

Chair: Paolo De Natale (CNR-INO, Italy)

16.40 – 17.00 Oliver Graydon (Nature Photonics) “*Trends and innovation in scientific publishing*”

17.00 – 17.15 M. Zaccanti (CNR-INO, Italy) “*Ultracold LiCr: a new pathway to quantum gases of paramagnetic polar molecules*”

17.15 – 17.30 G. Patera (University of Lille, France) “*Quantum characterization of multimode light from silicon-based microresonators*”

17.30 – 17.45 L. Massaro (Università degli Studi di Bari, Italy) “*Light-field imaging through light coherence*”

**17.45 – 18.00 Closing Remarks and Awards Ceremony** – P. De Natale, M.S. Vitiello, B. Williams

**18.00 – 18.45 Aperitif and Piano Bar**

swimming pool & Bar

**Pre-dinner final session-Joint session with I-PHOQS mid-term review meeting**

Chair: Paolo De Natale (CNR-INO, Italy)

Speeches by

- Theodor W. Hänsch (Max Planck Institute and TUM, Germany)

- Peter Zoller (University of Innsbruck, Austria)

- Alexander Gaeta (Columbia University, USA)

20.30 Free dinner



## Poster session I

1. A. Albo (Bar-Ilan University, Ramat Gan Israel) “The influence of doping concentration on split-well resonant-phonon terahertz quantum cascade lasers”
2. T. Sato (Nextnano Lab, France) “*Towards Multiband Modeling of Transport in Interband Cascade Lasers and Detectors*”
3. S. Iseri (Technische Universität Wien, Austria) “*Single-mode ridge- and ring-cavity interband cascade lasers for environmental sensors*”
4. V. Zeninari (Université de Reims Champagne-Ardenne, CNRS, France) “*An Interband Cascade Laser Sensor Dedicated To Monitor Gaseous Ethanol Above Sparkling Wines*”
5. J. Fuchsberger (Technische Universität Wien, Austria) “*Comparison of Interband Cascade Detector structures with and without Gallium for high-speed applications*”
6. A. Cargioli (ETH Zürich, Switzerland) “*Strongly RF-Modulated Quantum Cascade Lasers: Making Broad and Stable Emitters*”
7. V. D'Agostino (Università della Campania "L. Vanvitelli", Italy) “*Mid-IR High Precision Spectroscopy with a Comb-Assisted Interband Cascade Laser Spectrometer*”
8. J. Pelini (Istituto Nazionale di Ottica - CNR, Italy) “*High-performance Mid-Infrared QCL-based Cantilever Enhanced photoacoustic sensor*”
9. L. Lucia (Centre de Nanosciences et de Nanotechnologies – CNRS, France) “*Mid-infrared photonics integrated device on III-V platform*”
10. G. Di Gioia (Université Lille, France) “*GaAs/AlInP Mid-Infrared Waveguide Platform*”
11. R.E. Vass (ETH Zürich, Switzerland) “*Low-dissipation Quantum Cascade Lasers*”
12. Wang (Nanyang Technological University, Singapore) “*Mid-infrared upconversion detection with Lanthanoid Nanotransducer*”
13. E. Cosentino (Univ. Paris Saclay, France) “*Low intensity saturation in ISB cavity arrays as a tool towards mid-IR SESAMs*”
14. R. Vallon (Université de Reims Champagne-Ardenne, France) “*Intrapulse quantum cascade laser spectroscopy applied to an outdoor gas release measurement*”
15. R. Riccio (Univ. Paris Saclay, France) “*High Q-factors microcavities to achieve net gain condition in resonant intersubband polariton-polariton scattering scheme*”
16. Piciocchi (ETH Zürich, Switzerland) “*Fast Interleaving FTIR Spectroscopy With Strongly Modulated Broadband Quantum Cascade Lasers*”
17. P. Täschler (ETH Zürich, Switzerland) “*Wafer-level testing of Quantum Cascade Surface Emitting Lasers*”
18. R. Brun (Princeton university, USA) “*Utility of a Low-Doped AlGaAs Claddings for Long-Wavelength GaAs-Based Quantum Cascade Lasers*”
19. D'Ambrosio (Istituto Nazionale di Ottica – CNR, Italy) “*Infrared-to-THz detectors based on Whispering-Gallery-Mode microresonators*”
20. B. Chomet (Ecole Normale Supérieure, Paris) “*Time domain analysis of the electric field emitted by a harmonic frequency comb quantum cascade*”.

## Poster Session II

1. A. Albo (Bar-Ilan University, Ramat Gan Israel) “Overcoming Broadening Challenges and Practical Implementation of m-Plane GaN Two-Well Terahertz Quantum Cascade Laser”
2. X. Lu (Paul-Drude-Institut für Festkörperelektronik, Germany) “Development of Terahertz Quantum-Cascade Lasers for Applications in Spectroscopy and Imaging”
3. X. Ma (Chinese Academy of Sciences, China) “Self-detected terahertz dual-comb spectrometers deployed with a closed-cycle liquid helium cooler”
4. V. Pistore (Paul-Drude-Institut für Festkörperelektronik, Germany) “Performance analysis of THz QCLs for high-temperature continuous-wave operation”
5. S.S. Gloor (ETH Zürich, Switzerland) “Low-current, surface-emitting THz QCL devices for high-temperature operation”
6. M. Haider (Technical University of Munich, Germany) “Decay-Induced Noise Modeling of Quantum Cascade Laser Frequency Combs within a Maxwell-Density Matrix Langevin Approach”
7. A. Valavanis (University of Leeds, UK) “Real-time THz-QCL gas spectroscopy using an antenna-coupled field-effect transistor array detector”
8. S. Kondawar (University of Leeds, UK) “Integrated THz QCL instrumentation for satellite applications”
9. T.P. Seck (Université de Strasbourg, France) “Controlling charge transport with multisubband plasmons ultrastrongly coupled to a THz cavity”
10. J. F. Stowasser (Technical University of Munich, Germany) “Towards Field-Quantized Simulations of Quantum Cascade Lasers by Stochastic Differential Equations”
11. R. Eramo (Istituto Nazionale di Ottica – CNR, Italy) “Metrology of frequency combs: exploring the borders between multimode and mode-locked sources”
12. J. Wang (Suzhou Everbright Photonics Co., China) “Mid-infrared quantum cascade lasers grown by MOCVD”
13. A. Smerzi (Istituto Nazionale di Ottica – CNR, Italy) “Entanglement-enhanced multiphase estimation theory”
14. J. Cui (Nanyang Technological University, Singapore) “Super-bound states-assisted flat-band lasers”
15. M. Capezzuto (Istituto Nazionale di Ottica – CNR, Italy) “High-resolution fiber Bragg-grating broadband spectrometer”
16. G. Santambrogio (Istituto Nazionale di Ottica – CNR, Italy) “Characterization of a molecular beam from a buffer gas cell using metastable CO”
17. J. Bloomfield (UCLA, USA) “RF Injection Locking of THz QC-VECSEL Frequency Combs”
18. M. Shahili (UCLA, USA) “Terahertz Quantum-Cascade Vertical-External-Cavity Surface-Emitting-Laser above 5 THz”