

Day 1

### Monday, June 17

**08.30-09.30** RECEPTION  
&REGISTRATION

**09.30-09.45** OPENING REMARKS

**09.45 -10.30** PLENARY PRESENTATION  
**Session Chair:** Aniceto Belmonte, *UPC BarcelonaTech (Spain)*

**09.45-10.30** Perspectives on the Future of Coherent Laser Radar  
Paul McManamon, *Exciting Technology (USA)*  
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**10.30-11.00** COFFEE BREAK

**11.00-12.30** **Session 1**  
COHERENT LIDAR DEVELOPMENTS  
**Session Chair:** Philip Gatt, *Lockheed Martin Coherent Technologies (USA)*

**11.00-11.30** **Invited Paper**  
New fiber laser and coherent lidar developments at ONERA  
Agnes Dolfi-Bouteyre, Beatrice Augere, Guillaume Canat, Nicolas Cezard, Alexandre Dobroc, Mathieu Duhant, Anne Durecu, Didier Fleury, Julien Le Gouet, Didier Goular, Laurent Lombard, Christophe Planchat, William Renard, Matthieu Valla and Claudine Besson, *ONERA (France)*  
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**11.30-12.00. Invited Paper**  
Development of wind sensing coherent Doppler LIDAR at Mitsubishi Electric Corporation ~from late 1990s to 2013  
Shumpei Kameyama, Takayuki Yanagisawa, Toshiyuki Ando, Takeshi Sakimura, Hisamichi Tanaka, Masashi Furuta and Yoshihito Hirano, *Mitsubishi Electric Corporation (Japan)*  
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**12.00-12.30** **Invited Paper**  
Assessing the metrological capabilities of Wind Doppler Lidars  
Jean-Pierre Cariou, Ludovic Thobois, Rémy Parmentier, Matthieu Boquet and Sophie Loaec, *LEOSPHERE (France)*  
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**12.30-14.00** LUNCH

**14.00-15.30** **Session 2**  
COHERENT DOPPLER SYSTEMS  
**Session Chair:** Agnès Dolfi-Bouteyre, *ONERA (France)*

**14.00-14.30** **Invited Paper**  
Frequency diversity in LIDAR/LADAR links operating in NIR/SWIR bands  
Stojan Radic, *UC San Diego (USA)*  
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**14.30-14.50** Mobile Coherent Doppler LIDAR system for wind sensing  
Toshiyuki Ando and Eisuke Haraguchi, *Mitsubishi Electric Corporation (Japan)*  
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**14.50-15.10** Coherent Wind LIDAR Based on a Coherently-Beam-Combined Pulsed Laser Source  
Matthieu Valla, Laurent Lombard, Christophe Planchat, Didier Goular, Béatrice Augère, Pierre Bourdon and Guillaume Canat, *ONERA (France)*  
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**15.10-15.30** Coherent Beam Combination of Multiple phase modulated optical signals for a coherent Doppler LIDAR  
Eisuke Haraguchi, Toshiyuki Ando, Jiro Suzuki and Yoshihito Hirano, *Mitsubishi Electric Corporation (Japan)*  
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**15.30-16.00** COFFEE BREAK

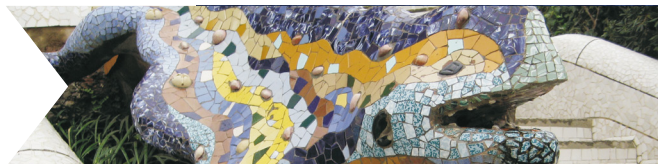
**16.00 -17.50** **Session 3**  
COHERENT LIDAR TECHNOLOGY  
**Session Chair:** Stojan Radic, *University of California, San Diego (USA)*

**16.00-16.30** **Invited Paper**  
Advanced 2- $\mu$ m Ho: YLF transmitter and coherent DIAL for atmospheric CO<sub>2</sub> profiling in the boundary layer  
Fabien Gibert, Dimitri Edouart, Claire Cénac, Florian Le Mounier and Pierre Flamant, *LMD/CNRS (France)*  
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**16.30-16.50** MO Frequency Stability Requirements for Coherent Ladar  
Maurice Halmos, *Raytheon Space & Airborne Systems (USA)*  
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**16.50-17.10** 3.2-mJ, 1.5- $\mu$ m laser power amplifier using an Er,Yb: glass planar waveguide for coherent Doppler LIDAR  
Takeshi Sakimura, Yojiro Watanabe, Toshiyuki Ando, Shumpei Kameyama, Kimio Asaka, Hisamichi Tanaka, Takayuki Yanagisawa, Yoshihito Hirano, *Mitsubishi Electric Corporation (Japan)*; and Hamaki Inokuchi, *Japan Aerospace Exploration Agency (Japan)*  
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**17.10-17.30** Near IR APD detectors. Application to high sensitivity direct detection DIAL  
Johan Rothman, Kevin Foubert, *CEA/LETI (France)*; Florian Le Mounier, Dimitri Edouart, *LMD/CNRS (France)*; Claire Cénac, *CNRS (France)*; and Fabien Gibert, *LMD/CNRS (France)*  
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**17.30-17.50** Adaptative compensation on free-space optical coherent systems  
Esdras Anzuola and Aniceto Belmonte, *UPC BarcelonaTech (Spain)*  
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Day 2

**Tuesday, June 18**

**08.00-09.00** RECEPTION & REGISTRATION

**09.00-10.30** **Session 4**  
DIRECT-DETECTION DOPPLER LIDARS  
**Session Chair:** Adolfo Comerón, *UPC BarcelonaTech (Spain)*

**09.00-09.30** **Invited Paper**  
The Aeolus Wind LIDAR Mission and its Aladin instrument: Technical status and latest results  
Anders Elfving, Alain Culoma, Denny Wernham, *ESA/ESTEC (The Netherlands)*  
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**09.30-10.00** **Invited Paper**  
Review of key characteristics of coherent and direct detection lidar receivers and relevance to wind measurement lidar system trades  
Sammy Henderson, *Beyond Photonics (USA)*  
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**10.00-10.30** **Invited Paper**  
Comparing and Contrasting the Optical Autocovariance Wind Lidar (OAWL) and Coherent Detection Wind Lidar  
Sara Tucker and Carl Weimer, *Ball Aerospace & Technologies Corporation (USA)*  
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**10.30-11.00** COFFEE BREAK

**11.00-12.30** **Session 5**  
SHIPBORNE, AIRBORNE AND AIRPORT LIDAR MEASUREMENTS  
**Session Chair:** Jean-Pierre Cariou, *LEOSPHERE (France)*

**11.00-11.30** **Invited Paper**  
Offshore wind flow variability from ship-borne lidar measurements  
Yelena Pichugina, *CIRES/NOAA (USA)*; Robert Banta, Alan Brewer and Mike Hardesty, *NOAA (USA)*  
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**11.30-11.50** All-weather sensors (lidar + radar) for Wake-Vortex hazards mitigation on Airport  
Agnes Dolfi-Bouteyre, Didier Goular, Christophe Planchat, *ONERA (France)*; Sophie Loaec, Ludovic Thobois, Jean-Pierre Cariou, *LEOSPHERE (France)*; Frederic Barbaresco, Philippe Juge, Fabrice Orlandi, Yves Ricci and Mathieu Klein, *Thales Air Systems (France)*  
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**11.50-12.10** Direct Measurement of Initial Wake Separation (bo) Using Pulsed Lidars  
Hadi Wassaf, *Volpe Center / DOT (USA)*; David Burnham, *Scientific & Engineering Solutions Inc. (USA)*; and Frank Wang, *Volpe Center / DOT (USA)*  
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**12.10-12.30** Airborne DWL/WRF model investigation of flow over complex terrain (MATERHORN 2012)  
G. D. Emmitt, S. Greco, K. Godwin and S. de Wekker, *Simpson Weather Associates (USA)*  
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**12.30-14.00** LUNCH

**14.00-15.30** **Session 6**  
DOPPLER MEASUREMENT TECHNIQUES  
**Session Chair:** Alain Dabas, *Météo-France (France)*

**14.00-14.30** **Invited Paper**  
Light with a twist: opportunities and challenges  
Juan P. Torres, *ICFO/UPC BarcelonaTech (Spain)*  
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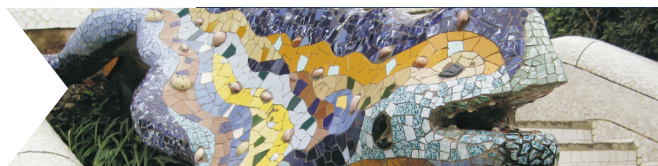
**14.30-14.50** Comparison of Single- and Dual-Doppler Lidar Wind Vector Retrievals with In-Situ and Vertical Lidar Measurements as They Apply to Wind Resource Assessment  
Keith S. Barr, *Lockheed Martin Commercial Ventures (USA)*; Justin Sharp, *Sharply Focused (USA)*; and Dan E. Wolfe, *NOAA (USA)*  
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**14.50-15.10** Transverse Doppler Effect using engineered optical beams  
Carmelo Rosales, Nathaniel Hermosa, *ICFO (Spain)*; Aniceto Belmonte, *UPC BarcelonaTech (Spain)*; and Juan P. Torres, *ICFO/UPC BarcelonaTech (Spain)*  
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**15.10-15.30** Wave Optic Analysis of Fizeau Fringes with Plate Defects  
Michael Vaughan and Kevin Ridley, *Optical & Lidar Associates (UK)*  
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**15.30-16.00** Coffee Break

**16.00 -17.50** **Session 7**  
LIDAR MEASUREMENTS  
**Session Chair:** Sammy Henderson, *Beyond Photonics (USA)*



- 16.00-16.30 Invited Paper**  
Recent and ongoing coherent Doppler lidar measurements at DLR  
Stephan Rahm, *DLR (Germany)*  
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- 16.30-17.00 Invited Paper**  
Air/sea energy exchange using TODWL and a towed platform (Unified Physical Parameterization Project)  
G. D. Emmitt, K. Godwin and R. Foster, *Simpson Weather Associates (USA)*  
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- 17.00-17.30 Invited Paper**  
Lidars for operational meteorology  
Alain Dabas, *Météo-France (France)*  
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- 17.30-17.50** Non-mechanical conformal beam steering system with an 80° x 80° field of regard  
Joseph Buck, Steve Serati, Boulder Nonlinear Systems Inc. (USA); Jihwan Kim, Michael Escuti, North Carolina State University (USA); and Rob Morrison, Coherent Investments, LLC (USA)  
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Day 3  
**Wednesday, June 19**

- 08.00-09.00** RECEPTION & REGISTRATION
- 09.00-10.30 Session 8**  
LIDAR OBSERVATIONS AND MONITORING  
**Session Chair:** Stephan Rahm, *DLR (Germany)*
- 09.00-09.30 Invited Paper**  
Europe on Earth Observation Lidar  
Pierre Flamant, *LMD/CNRS (France)*  
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- 09.30-10.00 Invited Paper**  
The French-German Climate Mission MERLIN  
Gerhard Ehret, *DLR Institute for Atmospheric Physics (Germany)*; Pierre Flamant, *LMD/CNRS (France)*; Bruno Millet, *CNRS (France)*; Matthias Alpers, *DLR Space Administration (Germany)*; Philippe Crebassol, *CNRS (France)*; and Christian Stephan, *DLR Space Administration (Germany)*  
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- 10.00-10.30 Invited Paper**  
ACTRIS: European aerosols, clouds, and trace gases research infrastructure network  
Gelsomina Pappalardo, *IMAA-CNR (Italy)*; Adolfo Comeron, *UPC BarcelonaTech (Spain)*  
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**10.30-11.00** COFFEE BREAK

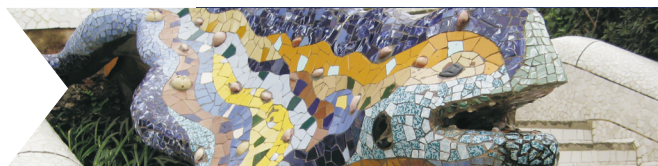
- 11.00-12.30 Session 9**  
COHERENT DIAL SYSTEMS  
**Session Chair:** Shumpei Kameyama, *Mitsubishi Electric Corporation (Japan)*
- 11.00-11.30 Invited Paper**  
Methods for retrievals of CO<sub>2</sub> mixing ratios from JPL Laser Absorption Spectrometer flights during a summer 2011 campaign  
Robert Menzies, Gary Spiers and Joseph Jacob, *NASA JPL (USA)*  
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- 11.30-11.50** 2-micron laser development for wind and CO<sub>2</sub> sensing  
Kohei Mizutani, Toshikazu Itabe, Shoken Ishii, Hironori Iwai, Motoaki Yasui, *NICT (Japan)*; Kazuhiro Asai, Atsushi Sato, *Tohoku Institute of Technology (Japan)*; Hirotake Fukuoka, *Hamamatsu Photonics K.K. (Japan)*; Takayoshi Ishikawa, *Nippon Aleph Co. (Japan)*; and Teiji Kase, *NEC Co. (Japan)*  
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- 11.50-12.10** Development of airborne 2-μm coherent lidar for CO<sub>2</sub> and wind measurements  
Shoken Ishii, Kohei Mizutani, Philippe Baron, Hironori Iwai, *NICT (Japan)*; Yoshihiro Asawaka, Teiji Kase, Tsutomu Murayama, *NEC Co. (Japan)*; Tetsuo Shiina, Takashi Imaoku, *NEC Engineering Ltd. (Japan)*; Takahiro Ishikawa, *Nippon Aleph*

*Co. (Japan)*; Toshikazu Itabe, *NICT (Japan)*; Kazuhiro Asai, Atsushi Sato, *Tohoku Institute of Technology (Japan)*; Motoaki Yasui, *NICT (Japan)*; and Kenichi Kurata, *NECE (Japan)*  
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- 12.10-12.30** Coherent Doppler Lidar Backscattered Signal Power Validation Against Direct Detection  
Sameh Abdelazim, David Santoro, Mark Arend, Fred Moshary and Sam Ahmed, *The City College of New York (USA)*  
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**12.30-14.00** LUNCH

- 14.00-15.30 Session 10**  
COHERENT IMAGING AND VIBROMETRY  
**Chair:** Maurice Halmos, *Raytheon (USA)*
- 14.00-14.30 Invited Paper**  
The Autodyne Laser Vibrometer  
Thomas Karr, *DARPA/STO (USA)*  
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- 14.30-14.50** Applications of Digital Holographic Imaging at Lockheed Martin Coherent Technologies  
Philip Gatt and Samuel T. Thurman, *Lockheed Martin Coherent Technologies (USA)*  
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**14.50-15.10** Phase noise of two wavelength coherent imaging system as function of spatial frequency content  
Benjamin Dapore, *Ladar & Optical Communications Institute (USA)*; David Rabb, *AFRL/RYMM*; and Joseph Haus, *Ladar & Optical Communications Institute (USA)*  
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**15.10-15.30** Multiple-Path LIDAR Vibrometer for Remote Modal Study of Reinforced Concrete Buildings  
Matthieu Valla, *ONERA (France)*; Julien Totems, *LSCE (France)*; Béatrice Augère, Didier Goular, Didier Fleury, *ONERA (France)*; Philippe Guéguen, Matthieu Perrault, *ISTerre (France)*; and Christophe Planchat, *ONERA (France)*  
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**15.30-16.00** COFFEE BREAK

**16.00 -17.20** **Session 11**  
ATMOSPHERIC ANALYSIS AND ESTIMATION  
**Session Chair:** Gerart Heret, *DLR (Germany)*

**16.00-16.20** Short-range measurement of extinction in fog with heterodyne lidar  
Céline Klein and Alain Dabas, *Météo-France (France)*  
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**16.20-16.40** Estimation of the turbulence energy dissipation rate  
Viktor Banakh, Igor Smalikho, *Institute of Atmospheric Optics (Russia)*; Yelena Pichugina and Alan Brewer, *NOAA (USA)*  
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**16.40-17.00** Numerical model of radial wind velocity in case of Gaussian approximation of range weighting function  
Evgeniya Shelekhova and Alexander Shelekhov, *IMCES SB RAS (Russia)*  
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**17.00-17.20** Concept of wind LIDAR system with the adaptive parameter tuning to atmospheric condition  
Nobuki Kotake, Masaharu Imaki and Shumpei Kameyama, *Mitsubishi Electric Corporation (Japan)*  
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**17.20 -17.30** CONCLUSION & ADJOURN

**20.30-22.00** CONFERENCE DINNER  
Restaurant Maritim  
(Moll d'Espanya s/n)

Day 4

**Thursday, June 20**

**09.00 -13.00** WALKING GUIDED TOUR  
Barcelona Modernism