

## Comb Lidar Workshop

### Toulouse – June, Wednesday 8<sup>th</sup>, 2022

9:00 AM: *Check in / registration. Coffee.*

9:30 AM: General introduction – Philippe-J. Hébert, Centre National d'Études Spatiales (Toulouse, France)

#### 10:05 AM - SESSION 1: What was done already

10:05 AM: *Frequency comb for precision measurement*, Ian Coddington, National Institute of Standards and Technology (Boulder, USA)

10:40 AM: *Coffee break*

11:05 AM: *Dual comb interferometry at Laval, Referencing the beat note & A ranging perspective*, Jérôme Genest, Université Laval (Québec, Canada)

11:40 AM: *R&D activities at ONERA / CNES*, Nicolas Cezard, François Lemaître, Office National d'Études et de Recherches Aérospatiales (Toulouse, France)

12:15 PM: **poster session**

12:50 PM: **Lunch**

#### 2:10 PM - SESSION 2: Technical : system

2:10 PM: *SCALE principles*, Philippe-J. Hébert, Centre National d'Études Spatiales (Toulouse, France)

2:45 PM: *SCALE advantages for retrieval*, Pierre Lafrique, Centre National d'Études Spatiales (Toulouse, France)

3:20 AM: *Towards an EOFC-based IPDA Lidar for atmospheric CO<sub>2</sub> measurements*, William Patiño, Office National d'Études et de Recherches Aérospatiales (Toulouse, France)



**3:55 PM : poster session**

4:30 PM: Coffee break

4:55 PM: *Applications of open path dual comb spectroscopy*, Kevin Cossel, National Institute of Standards and Technology (Boulder, USA)

5:30 PM: *Signal processing for SCALE*, Marion Costella, Centre National d'Études Spatiales (Toulouse, France)

**6:05 PM: poster session**

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**7:00 PM : social event**

## Comb Lidar Workshop

### Toulouse – June, Thursday 9<sup>th</sup>, 2022

8:30 AM: *Check in, Coffee.*

#### 9:00 AM SESSION 3: Technical : technologies

9:00 AM: *Highly efficient mJ level laser amplifier at 2 microns for frequency comb spectroscopy*, Sébastien Vidal, Centre Technologique Optique et Laser ALPhaNOV (Talence, France)

9:35 AM: *Developements of new technics to generate multiple frequency combs in optical fibers*, Arnaud Mussot, Laboratoire de Physique des Lasers, Atomes et Molécules (Lille, France)

10:10 AM: *Coherent combination of femtosecond lasers*, Jean-Christophe Chanteloup, Ecole Polytechnique (Palaiseau, France)

10:45 AM: *Coffee break*

#### 11:10 AM: poster session

11:45 AM: *Photonic Integrated Circuits for LIDAR*, Anton Stroganov, Ligentec (Eclubens, Switzerland)

12:20 PM: *Frequency comb based absolute frequency reference for airborne and satellite based multi species differential absorption Lidar systems*, Dirk Heinecke, SpaceTech International (Immenstaad, Germany)

#### 12:55 PM: Lunch

2:15 PM: *Dual Comb spectroscopy using a bidirectional ring Titanium Sapphire laser cavity: Towards UV-DCS for atmospheric trace gases detection*, Sandrine Galtier, Institut Lumière-Matière (Lyon, France)



2:50 PM: *Latest researches and developments at Menlo*, Adrien Aubourg, Menlo Systems (Planegg, Germany)

3:25 PM : **poster session**

#### **4:00 PM SESSION 4: Projects**

4:00 PM: *Development of an airborne demonstrator of SCALE*, Véronique Tyrou, Centre National d'Etudes Spatiales (Toulouse, France)

4:20 PM: *Airbus LIDAR experience in space remote sensing and interest on new short comb LIDAR technology*, Géraud De Villele, Airbus Defense and Space (Toulouse, France)

4:40 PM: **Coffee break**

4:40 PM: *Lidar roadmap at ESA*, Pol Ribes, European Space Agency (Noordwijk, The Netherlands)

5:25 PM: *CNES involvement in new instrument design*, Philippe Kubik, Centre National d'Etudes Spatiales (Toulouse, France)

5:45 PM: **debate**

**6:00 PM: close out**