



**SECOND INTERNATIONAL SYMPOSIUM
ON NOISE FROM UASs, UAVs and eVTOLS
June 27-29 2022 - A fully remote event**

DRAFT TECHNICAL PROGRAMME SCHEDULE

**This draft programme is based on the state of
confirmation of papers at the date of April 26th 2022**

Registration, general information: **www.quietdrones.org**

MONDAY JUNE 27

9AM-10AM

Welcome to participants

Informal conversations between delegates and last information for the organisation

10AM-12PM

SESSION #1 – Propeller and motor noise modelling

Co-chairs: **Christophe Schram** (VKI, BELGIUM)
Franck Cléro (ONERA, FRANCE)

<i>Aeroacoustic investigation of co-rotating rotors</i>	Edoardo Grande Delft University of Technology	THE NETHERLANDS
<i>Computational aeroacoustics of the urban air mobility using APAC method</i>	Yuhong Li The Hong Kong University of Science and Technology	CHINA
<i>Noise Prediction of Multiple MAV Rotors including Tonal and Broadband Components</i>	Yeongmin Jo Hanseu University	KOREA
<i>Numerical study of the aeroacoustics of shrouded propellers for Urban AirMobility vehicles</i>	Sinforiano Cantos The Hong Kong University of Science and Technology	CHINA
<i>Turbulence ingestion noise from multi-rotor UAVs</i>	Ryan McKay (Dotterel Technologies)	NEW ZEALAND
<i>Application of Acoustic-Vortex Decomposition for Numerical Simulation of Drone Prop. Noise</i>	Sergei Timushev Moscow Aviation Institute - National Research University	RUSSIA

12PM-1:30PM PANEL DISCUSSION #1: Managing Community Noise from Drone Delivery

Organized by: **Marion Burgess** (UNSW, AUSTRALIA)
Eddie Duncan (RSG, USA)

This panel discussion will start with 4 to 5 short presentations (approx. 3 min each) followed by a general discussion on the experiences with the management of community reactions to the noise from drone deliveries and the approaches to minimising annoyance as well as the challenges of dealing with the regulatory framework. The short presentations will be given by experts experienced with managing the noise from a range of different types of drone delivery, ie. direct to the home, to a central distribution area etc.

List of panelists to be finalised soon.

Break

MONDAY JUNE 27

1:45PM **Welcome to participants**

2PM **Keynote #1 - Advancing Aerial Mobility: A National Blueprint**

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Nicholas Lappos (Lockheed Martin, USA)

Chaired by: George Maling (Managing director emeritus INCE-USA and NAE, USA)

Break

2:45PM **Keynote #2 - A Summary of the 2020 e-Workshop: Aerial Mobility - Noise Issues and Technology held at the US National Academy of Engineering**

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Robert D. Hellweg (Hellweg Acoustics, USA)

Chaired by: Jean Tourret (President INCE/Europe, FRANCE)

Break

3:30 - 5PM **SESSION #2 - Acoustic Detection and Identification of Drones**

Co-chairs: Lucille Pinel- Lamotte (MicrodB, FRANCE)
Martin Blass (Joanneum Research, AUSTRIA)

<i>Towards mobile microphone array-based UAV tracking</i>	Martin Blass JOANNEUM RESEARCH	AUSTRIA
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<i>UAV acoustic localization in a maritime environment: from first results to improvements perspectives</i>	Mathis Bonotto Gipsa-Lab	FRANCE
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<i>Acoustic-based detection of drone noise under practical uncertainty factors</i>	Han Wu The Hong Kong University of Science and Technology	CHINA
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<i>Comparison of different processing for DOA estimation of an Unmanned Aerial Vehicle with few sensors</i>	Nathan Itare Le Mans University	FRANCE
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<i>Deepomatics: A deep-learning based multimodal approach for aerial drone detection and localization</i>	Eric Bavu LMSSC, CNAM Paris	FRANCE
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5PM **Conversation #1: Come and meet the other delegates**

TUESDAY JUNE 28

9AM-11AM

SESSION #3 - Drone audition for search and rescue

Co-chairs: **Antoine Deleforge** (INRIA, FRANCE)
Shaun Edlin (Dotterel Technologies, NEW ZEALAND)
Michael Kingan (Auckland University, NEW ZEALAND)

Improvement of Rotor Noise Reduction for Unmanned Aerial Vehicle Audition by Rotor Noise PSD Informed Beamformer Design **Yameizhen Li** NEW ZEALAND
Acoustics Research Center,
University of Auckland

Optimization of Microphone Array Placement for Sound Source Localization Using Drones with Microphone Arrays **Taiki Yamada** JAPAN
Tokyo Institute of Technology

Direction Estimation of Speech Source Based on Deep Learning Using Two Microphones Installed on a Drone **Seongil Hwang** KOREA
Chungnam National University

Autonomous Kiteplane System for Drone Audition **Makoto Kumon** JAPAN
Kumamoto University

Sound source localization and enhancement from a flying micro aerial vehicle **Lin Wang** UK
Queen Mary University of London

SENSEFLY: Noise level inspection with Drones **Luis Augusto Silva** SPAIN
Universidad de Salamanca

11AM-1PM

SESSION #4 - Propeller and motor noise experiments

Co-chairs: **Tiziano Pagliaroli** (Unicusano, ITALY)
Hélène Parisot-Dupuis (ISAE -SUPAERO, FRANCE)

Experimental analysis on pitch angle effect on a small-scale propeller to quiet drones' flight **Paolo Candeloro** ITALY
Unicusano

An Experimental Investigation of Multi-Rotor Drone Based on Acoustic Hemisphere **Yeong-Ju Go** KOREA
Chungnam National University

Experimental investigation on the noise related to rotors interaction **Paolo Candeloro** ITALY
Unicusano

Electric Motor Drive and Noise **Alex Hardy** UK
Vulcan UAV Ltd

Investigation on lightweight double-leaf cylindrical microperforated-panel structures for motor noise reduction of UAVs **Gianyujie Qian** CHINA
Hohai University

Break



TUESDAY JUNE 28

2PM – Keynote #3: Activities of the NASA Urban Air Mobility Noise Working Group (UNWG)

Stephen A. Rizzi (NASA Langley Research Center, USA)

Chair: **Patricia Davies** (I-INCE V-President Technical Activities, USA)

Break

3PM-5PM SESSION #5 - Assessing Noise and its Impact on People and Environment

Co-chairs: **Antonio J. Torija** (University of Salford, UK)
Roalt Aalmoes (NLR, THE NETHERLANDS)

<i>Estimation of noise exposure due to drone operations</i>	Carlos Ramos-Romero Acoustics Research Centre, University of Salford	UK
<i>Noise impact on humans – calculation methods and results for some conceivable applications</i>	Stefan Becker BeSB GmbH Berlin Schalltechnisches Büro	GERMANY
<i>Recent NASA research into the psychoacoustics of Urban Air Mobility (UAM) vehicles</i>	Andrew Christian NASA	USA
<i>Experimental investigations and psychoacoustic analysis of a DJI Phantom 3 quadcopter</i>	Erica Gallo Von Karman Institute for Fluid Dynamics	BELGIUM

5PM Conversation #2: Come and meet the other delegates

WEDNESDAY JUNE 29

9AM-11AM

SESSION #6

Measurements of noise produced by drones and related standards

Co-chairs: **Xin Zhang** (The Hong Kong University of Science and Technology, CHINA)
Jean-Claude Guilpin (DGAC-DTA, FRANCE)

<i>Accurate measurement of Drone Noise on the ground</i>	Per Rasmussen GRAS Sound & Vibration	DENMARK
<i>Measurement of sound emission characteristics of quadcopter drones under cruise condition</i>	Gert Herold Technische Universität Berlin	GERMANY
<i>Estimating Unmanned Aircraft Takeoff Noise Using Hover Measurement Data</i>	Christopher Cutler-Wood US DOT Volpe Center	USA
<i>Outdoor UAV noise measurement</i>	Michael Kingan University of Auckland	NEW ZEALAND
<i>Acoustic evaluation of multi-rotor drones in anechoic and semi-anechoic chamber</i>	Zhida Ma The Hong Kong University of Science and Technology	CHINA
<i>Development of the standardized noise measurement procedures for unmanned aircraft system</i>	Siyang Zhong The Hong Kong University of Science and Technology	CHINA
<i>Development of a comprehensive drone performance evaluation platform</i>	Alex McGinn Trinity College Dublin	IRELAND
<i>Noise measurements procedures for eVTOLs</i>	Speaker to be determined	

11AM

Break

WEDNESDAY JUNE 29

11:15AM

SESSION #7

Noise prediction in different environments and flying conditions

Co-chairs: **Julien Caillet** (Airbus Helicopters, FRANCE)
Ignacio Gonzalez-Martino (Dassault Systèmes, FRANCE)

<i>A virtual flight simulation platform for community drone noise assessment</i>	Qichen Tan The Hong Kong University of Science and Technology	CHINA
<i>Numerical aerodynamics and aeroacoustics predictions of a drone under real urban environments</i>	Rémy Atassi Dassault Systèmes	FRANCE
<i>A reinforcement learning based low noise drone planning method</i>	Qichen Tan The Hong Kong University of Science and Technology	CHINA
<i>Numeric Investigation of the Noise Emission of a Cargo eVTOL UAV</i>	Michael Schmähl TU München	GERMANY

Break

2PM

Keynote #4:

Public acceptance and noise considerations in urban air mobility research – Intermediate results of DLR’s HorizonUAM project.

Bianca I. Schuchardt (DLR-FL, GERMANY)

Chair: **Fabrice Cuzieux (ONERA, FRANCE)**

2:45PM

SESSION #8

Public Acceptance of Drones and eVTOLs in the light of noise

Co-chairs: **Bianca I. Schuchardt (DLR-FL, GERMANY)**
Fabrice Cuzieux (ONERA, FRANCE)

Drones disruptions: Exploring the social and cultural implications of drone noise **Anna Jackman** **UK**
University of Reading

Airport regions authorities dealing with drones **Sergi Alegre Calero** **BELGIUM**
Airport Regions Council

Making access to the skies seamless **Zachary Kennedy** **AUSTRALIA**
Swoop Aero

A greenery-based solution for low-noise delivery hub for unmanned aerial transport **Claudio Pasquali** **ITALY**
Università degli Studi Roma Tre

Regulations at American, European, and international levels: present situation and perspectives **Speaker to be defined**

4:30PM

Panel Discussion #2:

Air taxis integration in European cities in the light of mobility and noise

Organized by: **Sergi Alegre Calero (Airport Regions Council, BELGIUM)**
A representant of International INCE (to be confirmed)

This panel discussion will start with information on UAM projects in several European cities. It will continue with presentation of noise performances of eVTOLs prototypes to be integrated in those projects, as well as acoustic requirements for vertiports, other infrastructures and corridors. It will also address the specific situation of European cities in terms of acceptance.

List of panelists to be finalised soon