EUROPEAN MECHANICS SOCIETY

Colloquium Final Report

N. 611 – Jet Noise Modelling and Control

Dates and location: **30/08/2021 - 01/09/2021, Poitiers France**

Chairperson **Peter Jordan**

Co-Chairperson **Lutz Lesshafft**

Conference fees

- Regular registration fee **330.0 €**
- Student registration fee **90.0 €**
- Online attendance registration fee **30.0 €**

What other funding was obtained? **No other funding received.**

What were the participants offered?
- Reception at Hôtel de Ville, Poitiers: welcome address by Madame La Maire, Léonore Moncond'huy; a performance by a duet from the Orchestre des Champs Elysées; cocktail.

- Three days of scientifique presentations and round-table discussion, in hybrid format (29 in-person participants; 25 video-conf).

- Three lunches at restaurants in the center of Poitiers.

- 1 colloquium dinner at Château de Dissay.

Number of members of Euromech (reduced registration fee) **6**

Number of non-members of Euromech (full registration fee) **48**

Applicants (members)

- André Cavalieri
- Tim Colonius
- David Fabre
- Vincent JAUNET
- Franck Kerhervé
- Aaron Towne

Applicants (non members)

- Mohammed Afsar
- Filipe Amaral

- Mateus AVANCI
- Daniel Bodony
- Christophe Bogey
- Clément Caillaud
- Sergey Chernyshev
- Quentin Chevalier
- Chloe (Haeyoung) Choi
- Daniel Edgington-Mitchell
- Georgy Faranosov
- Xavier Garnaud
- Flavio Giannetti
- Vasily Gryazev
- LEHNASCH GUILLAUME
- Liam Heidt
- Jerome Huber
- Peter Jordan
- Thomas Ludwig Kaiser
- Hasan Kamliya Jawahar
- Sergey Karabasov
- Ugur Karban
- Victor Kopiev
- Lutz Lesshafft
- Xiangru Li
- Annabel Markesteijn
- Eduardo Martini
- Theo Mouyen
- Elnaz Naghibi
- Akhil Nekkanti
- Petronio Nogueira
- Kilian Oberleithner
- Ravee Pathya
- Ethan Pickering
- Grégoire Pont
- Robin Prinja
- Jean-Christophe ROBINET
- Daniel Rodriguez
- Oliver Schmidt
- Javier Sierra Ausin
- Michael Stavropoulos
- Christopher Tam
- Vincent Valeau
- Mathieu Varé
- Chuhan Wang
- Marcus Wong
- MIKHAIL YUDIN
- Bruno Zebrowski

Scientific Report

SCIENTIFIC SUMMARY:

Jet noise modelling and control efforts, now more than ever, are largely based on hydrodynamic instability theory, informed by the analysis of experimental and numerical data. In particular, the strong predictive capacity of so-called linear resolvent analysis, and its link to spectral proper orthogonal decomposition of flow data, has been much investigated over the last five years, and these developments

have been showcased in many presentations at our colloquium. It is noteworthy that these tools and concepts, recent as they are in the academic community, are already employed in industrial research and development. Participating colleagues from industry played an active role in the presentations and discussions, and provided valuable guidance in the formulation of future development objectives.

Most leading academic research groups from the field were represented by a total of 54 participants at the colloquium. 23 of all participants were PhD students or postdocs, 3 were industrial R&D engineers. Participants came from institutions in France, Germany, Spain, Italy, UK, Russia, China, USA, Brazil and Australia. 25 participants joined the colloquium by video conference, due to travel or personal restrictions. For nearly all participants that were physically present, the colloquium was the first in-person scientific event since the start of the pandemic, and this occasion was enthusiastically appreciated.

38 oral presentations of 20 minutes each were given over the three days of the colloquium, 16 of these by participants connected from afar. Two round-table discussions of about one hour each were held on the topics "How have streaks changed the jet-noise modelling paradigm?" and "Towards non-linear dynamic modelling of jets and their sound". These two featured subjects were indeed at the center of many contributions; other recurring topics included the estimation of unknown flow data, the modelling of long-range flow resonance dynamics, and the understanding of aerodynamic sound sources.

TECHNICAL ORGANISATION OF THE HYBRID FORMAT:

The video conference technology was provided by the University of Poitiers: this included the audio/video hardware in the conference room, the hosting of the Webex video conference on the University's servers, the software license, and the technical support. All these services functioned reliably, and they allowed us to fully integrate our virtually present colleagues into the plenary presentations and discussions, including the two round-table sessions.
A private contractor, Triumph SRL, added an additional layer to the login process. To our great disappointment, this contractor did not provide any service of value for our colloquium. To the contrary, the involvement of Triumph SRL generated a good deal of extra work for the organisers, and confusion for our participants, in addition to a hefty bill. We regret that 2500€ from our colloquium budget were paid to Triumph SRL, in exchange for no added value, and with a license for them to use our participants' personal data for promotional purposes.

Number of participants from each country

Country	Participants
France	21
United States	9
Italy	2
Germany	3
Australia	5
Brazil	2
United Kingdom	6
Spain	1
Russia	4
China	1
Total	**54**

Please send this report in electronic form to the Secretary General of EUROMECH, within one month after your Colloquium.