



Newsletter's Summary

Agenda Get a reminder on upcoming events and deadlines. Feel free to contribute if you become aware of any change! News This month we've got a review of the YAN panel on INAD 2024 and a great interview with Davide Tomassone of Sergio Tomasone S.r.L. G Job announcements Find your dream job in this fresh list of opportunities! If you wish to announce a position, please email the <u>YAN team</u>. Publications This month, find a publication by Stephen Schade, "Smart Blade Count Selection to Align Modal Propagation Angle with Stator Stagger Angle for Low-Noise Ducted Fan Designs".

Upcoming Events

.... June 2024 05th - 07th Understanding Acoustics Enugu, Nigeria 10th - 11th BEBEC 2024 Berlin Beamforming Conference Berlin, Germany 12th - 14th International Conference ACOUSTICS 2024 High Tatras Štrbské Pleso, Vysoké Tatry, Slovakia 15th - 17th AES Europe 2024 International Convention Madrid, Spain 17th - 20th ICUA2024 International Conference on Underwater Acoustics Bath, UK 25th - 28th JJBA2024 2nd Emerging Bioacousticians Days Moulin-Blanc, Brest, France 26th - 28th AES 5th International Conference on Automotive Audio Gothenburg, Sweden July 2024 08th - 11th ICSV30 30th International Congress on Sound and Vibration Amsterdam, Netherlands 09th - 11th Workshop Guided Ultrasonic Waves : Emerging Methods (GUWEM) Überherrn, Germany 12th - 15th TOSS2 ACTOR Timbre and Orchestration Summer School Vancouver, Canada 25th - 27th IBPC2024 9th triennial conference of the International Association of Building Physics Toronto, Canada August 2024 25th - 29th INTER NOISE 2024 53rd International Congress and Exposition on Noise Control Engineering Nantes, France 26th - 30th EUSIPCO 2024 32nd European Signal Processing Conference Lyon, France **Upcoming Deadlines** June 2024 16th - Quiet Drones 2024 Manchester, UK. Paper submission 28th - Acústica 2024 XIII Congresso Ibérico de Acústica - Tecniacústica 2024. Faro, Portugal. Paper submission 30th - FIA 2024 13th Iberoamerican Congress on Acoustics. Santiago, Chile. Abstract submission July 2024 10th - IEEE IS2 2024 5th IEEE International Symposium on the Internet of Sounds. Erlangen, Germany. Paper submission

10th - 2nd IEEE International Workshop on Networked Immersive Audio Erlangen, Germany. Paper submission

August 2024

15th - FIA 2024

13th Iberoamerican Congress on Acoustics. Santiago, Chile. Paper submission

19th - Acoustics 2024

Manchester, UK. Paper submission

YAN Panel on International Noise Awareness Day

In case you missed it, this year on INAD, YAN organised a panel talk with experts from different fields of acoustics. We had the honour to talk to the following panel:

- 1. Prof. Christ Glorieux, an expert in physics modelling of acoustic wave propagation, building and room acoustic measurements, psychoacoustics and environmental noise monitoring, in particular around airports.
- 2. Prof, Gaetano Licitra, currently Director of the Pisa Department for the Environmental Agency of Tuscany Region. He has played a major role in the development of guidelines, including the WHO Night Noise Guidelines, the EEA Quiet Zone Guidelines, and IEC and ISO standards.
- 3. Prof. Stephen Stansfeld shared his expertise in noise sensitivity, noise and mental health and noise and children's learning. In the past, he directed the European 5th Framework funded RANCH Study on the effects of aircraft and road traffic noise on children's cognition and health and the European Network on Noise and Health (ENNAH).
- 4. Prof. Jian Kang who worked in the field of architectural and environmental acoustics for 40 years. He is currently working internationally on developing Soundscape Indices (SSID) to improve our environment.

The experts discussed some very intriguing aspects regarding the impact of noise on our life and how tandards and guidance need to consider more possible situations such as the type of residential area, the population density, and more importantly, the potential levels of annoyance for the residents by means of calculating combined sources. Some neighbourhoods could be mainly dominated by industrial noise and construction work that can last for years. So, how do we mitigate such situations?

We also gained some insight from Prof. Christ Glorieux on noise around big airports and how the possibility of registering complaints is a meaningful way to help residents cope with the aircraft noise. In practice, this simple action is not always accessible for the affected residents. According to Prof. Stephen Stansfeld, we are not able to become more tolerant to noise because even unconsciously our body still responds to the negative impact of noise such as stress. Thus, we need to find better ways to reduce the noise in our environment.

While there are plenty of solutions to reduce noise, some of these are impractical in urban areas (i.e. noise barriers). Thus, Prof. Jian Kang presented some of the extensive research he has done on using vegetation to reduce noise. We can introduce vegetated surfaces on rooftops or building facades which not only reduces noise but also introduces greening in our cities. And to add on top of that, it would be visually beautifying!.

Your opinion on peer-review and indexing of conference proceedings !! -

Peer-reviewing and indexing of conference proceedings requires additional efforts by conference organizers, absorbing resources that could otherwise be invested elsewhere. However, these efforts may be very valuable to you, young acousticians, in terms of research output, feedback, and quality assurance. ⊌ We are reaching out to you to request your valuable insights and perspectives on this. Your responses will serve directly as input for the European Acoustics Association (EAA) .

<u>https://forms.gle/LuuhpTwPcRawYSAU9</u>

Interview with Davide Tomassone, the biggest guitar reseller in Italy.

If you are a guitar connoisseur, you might have heard of Sergio Tomassone, the luthier or the shop chain in Italy. Maybe you even had a chance to enter one of their shops and met Sergio (born in 1939 and still doing guitar repairs and consulting every day!) or his son, Davide, in action. Regardless, there are several things that make this place special and, in particular make Davide Tomassone a noteworthy and unique reseller. Despite his job, Davide is also a charted acoustician with an interest in audio equipment and he applies this knowledge within their shops. He is also interested in research, and he is collaborating with people from academia to improve the vast guitar manufacturing industry. Thus, we decided to interview him and share his fascinating story with you all 🤢 **INT** = Arina Epure, Sebastian Duran

DT = Davide Tomassone

INT: First of all, thanks for the opportunity of this INT: Thanks for telling us the whole story from the interview; could you please tell us something about beginning. Now, how is acoustics contributing to your you, your family business and how did you get business? involved into acoustics?

much as I can. My father, Sergio Tomassone, started loudspeakers and PA systems. On top of that, the working as a trainee in a luthier shop ran by Mr. Enrico theoretical knowledge leaves the doors open for Piretti when he wasn't even 13. By the time he was 20, dreaming. he opened his own luthier laboratory, building from INT: ... Of? classical instruments, such as lutes, mandolins, classical DT: Dreaming of measuring and quantifying the tone and and acoustic guitars; afterwards carved top jazz models sound quality of musical instruments. This is what we were introduced, and eventually electric guitars once are starting to investigate at the moment (with Dr the '60s roared in. They were exporting Italian guitars Ausiello, University of Portsmouth). Beranek and many even to the American market at some point, and we others after him collected data from hundreds of recently found evidence of players of the calibre of venues, defined the acoustical parameters, to whose Pete Townsend and Eric Clapton playing and recording range of values we could eventually correlate listener with his guitars (STANTOM).

late '70s and the '80s, his focus had to shift, because a very similar research focused on pop and rock the competition was too tough to try to stay afloat with venue in EU and North-America... guitar building alone, so the business became a mix of DT: And he found different values of the same retail and customisation. By the end of the '80s, acoustical parameters which correlate better with those actually in 1989 both my brother Giampaolo and I joined music genres. And then he started manufacturing our father in the family business. I studied electronics products to support architects and acousticians who at a technical high school (you graduate from when you need to design such spaces. Another example we can reach 18), so my background is in maths and physics. take inspiration from (related to speech intelligibility) is When I started I helped with repair work, but then put a the STI. It was investigated and then became a lot of effort into the retail business.

My interest and active engagement with acoustics science. In the world of guitars, everything is still up in the level I was expecting, and I quickly realised that I vocabulary which can appeal creative people. was willing to become an expert.

new law came out, something called 4447 here in Italy, wine tasting experience for example. A sommelier which was describing for the first time the role and presenting a wine is capable of telling a whole story competences of a professional called "tecnico about the reality which could be experienced when competente in Acustica", which translates to tasting a glass of wine. Normal people would not "Chartered Acoustician". I decided I was going to be necessarily be able to write the same story, but they one, and I enrolled. At the beginning we had to go many are surely able to identify those qualities and features places to attend lessons, and I went to Milan as well as in the wine they're sipping. I'd love to see myself to Bologna and Ferrara to complete my studies. The capable of replicating this kind of expertise, especially fascinating thing was that for me acoustics was for acoustic guitars and instruments. Having a list of intrisically related to musical instruments, but while descriptors, of independent dimensions (ref. studying to become an acoustician I realised most of Soundscaping), which would allow an expert to tell the acoustics deals in fact with noise, insulation, and ... well tonal story, to describe the taste of an instrument. actually quite painful stuff!

DT: The main impact on the business is with electro-DT = It's a very long story, but I'll try to squeeze it as acoustic, considering we have a dedicated shop selling

preference with.

With the advent of the productions from Japan, in the INT: In more recent years Adelman-Larsen completed

standard. It's an approximation, but it is grounded in developed when we opened a parallel shop called All the air. The tone of an instrument is seen as dependant For Music, which is offering PA systems and all types of on who's playing it. Perception and preference are music technology together with other musical described as completely subjective... Manufacturers are instruments (winds, brasses, pianos, etc). We had the selling dreams more than data. We'd love to reach a opportunity to design and build some rehearsing spaces point where we have some measurements, some dedicated to musicians and bands. We wanted the descriptors. Not sterile words as C80, the integral of the rooms to sound good, so we hired a "specialist". In fact, first 80 ms of... no chance! That's not telling much to an the support we received (and dearly paid) was not up to audience of musicians, they won't buy it! We need a INT: I can buy that!

We're talking about 1997, and right in those years a DT: We need to get inspiration from the food industry, a

So, eventually, we completed the rehearsal spaces, and urgent to work on it before someone else does it... by the end of such odyssey I knew what a STIPA DT: Somehow some manufacturers are hinting at this. measurement was, or what the acoustical parameters We feel some of "big guys" of acoustic guitar making were, or how we effectively use a dodec, sine sweeps, are developing an interest for this... but we have some interrupted noise and so on and on.

date.

triggered the need to know more about acoustics?

materials and sound absorption materials. And if we tone of an instrument. only knew a bit more, we would have started with some INT: The excitation of the strings might not even be different room proportions! Nonetheless, the rehearsal linear... spaces do their job and we still use them.

there were many online resources scattered over the manufacturers have to include, in their design, some internet, and now many of these have been considerations regarding the final artistic use of the condensed in some quite useful and powerful instrument, which is analogous to say that a venue is websites, such as Amcoustics for example.

DT: Indeed, now they even offer the chance to predict parameters depending on the type of music (or speech) room modes for spaces which are not simple shoe-box which might be required to host. The biggest step, in rooms, which is amazing! But what I was describing was my opinion, is to prune the complexity of the problem actually happening in 1997, we're talking almost 30 and find the smallest number of parameters which are years ago.

INT: So effectively you are a "Chartered Acoustician" covering most of the qualitative tonal nuances we have according to the Italian law?

DT: Yes, I am. I got the certification almost 20 years advanced than what Beranek could rely upon, in my ago. We started with prof. Campolongo in Milan, going opinion this will take us longer. to the Bovisa Campus of the Politecnico. It's been a INT: Beranek dealt with a restricted number of while!

your certification in 1997, which is almost three different years before Farina published his seminal paper about DT: The number of users of acoustic guitar (not to the sine-sweep measurement technique...

my father's had contacts with the company which is not story short, this is a huge curiosity and, in my opinion, a known collaborating with Angelo Farina at the time, and we investing into. heard of Farina's work, and of convolutional algorithms. INT: Other aspects you think should be considered Actually, quite soon after, his famous simulation when investigating musical instrument from the software, RAMSETE, was released as well. Eventually perspective of acoustics? even our region, Emilia Romagna, started organising a DT: Ludo (Dr Ausiello, University of Portsmouth) and I training programme to offer the certification I was had several conversations regarding manufacturing over mentioning before, and in 1999 I enrolled locally in a the past years. Considering my role as a retailer, I don't school called ALDINI institute, and I ended up taking the have much visibility of what manufacturers do or final exam being surrounded by engineers and experiment with. New materials, new designs... it's not architects; I was quite humble, and I had to revise a lot part of our daily business. We're not part of Martin, of my maths and physics! The programme was a long Taylor, Gibson, Yamaha, so we don't' have a direct one, almost 200h of teaching.

would be equivalent, in terms of learning outcomes carbon fibre amongst the many. We don't have the and duration, to a post graduate certification

DT: Truth was that when I started it wasn't really clear stiffness, mobility, and so on though. And in general which kind of certification I would have ended with in artisans don't have the means as well. the end. My goal was to learn enough about acoustics INT: It must also be noted that artisans learn from and audio to be able to design systems for clubs and artisans, thus making the learning process quite venues, including discos, which were part of our reluctant to accept novelty ... customer base. There was quite some stir about the DT: Spot on! Last week I went to Pieve di Cento, where laws regarding noise, disturbance, levels, limiters to be there is a good luthier school, with good teachers and would have been quite relevant to sell a system the day telling the story of the business, discussing knowing how to calibrate it in such way to comply to building techniques, and what not. In an institution such with whom I'm still in contact.

INT: So, all in all, studying acoustic was ...

DT: Studying acoustic was a necessity, I couldn't face to beginning. Seven decades of change, of adapting to the be in the dark while trying to expand the family needs of players from the acoustic guitars to the business. While I was studying though it was quite electric ones. At the end we asked teachers and fascinating to reflect and connect so many "dots" ... so students how they see the future of guitar making. The many aspects of the traditional methods my father was answer was: silence. Nobody is thinking of the future. using when building guitars with modern and scientific All that was said was related to the past. Nobody approaches and knowledge. One amongst many, think of seemed to think out of the box. Students (and teachers) the tapping technique when working on a soundboard, were barely discussing about the possibility of using CNC and the analogies between that gesture and an impulse machines to work wood in a repeatable way. To be response measurement. We know it's not the same really honest with you, if I think of the basics of thing, but the similarities are fascinating.

was due to musical acoustics while in fact...

wanted to expand and integrate my knowledge of admit that there is still a lot of misinformation and lack electro-acoustic. Eventually I realised that most of of knowledge everywhere, from manufacturers, to these aspects, including signal processing, are all quite sellers, to final users. There is a lot of work to do to relevant in musical acoustics, especially with electric educate all people involved in this economic sector. instruments and semi-acoustic ones. In fact, I never When I started selling acoustic guitar I literally had to studied strings and their modelling, since the maths explain customers the difference between solid wood involved is very complex and, in the end, with the and plywood. The usual conversation a distributor of a business we deal with strings, but we don't consider brand could engage with was about the colour of the them as a "variable" in the usual signal chain that a tuners! (he laughs). I'm a bit too harsh maybe, but the musician deals with. Further to this, now there might sector has flourished with the star system connected be some models accurate enough to synthetize plates with the guitar heroes of the sixties and seventies. My and strings, but when I started my journey simulators father, Sergio, was a curious man. He eventually were rudimental and the general feeling was to be a bit decided to steer the business toward the retail side sceptical about their accuracy. Even in the field of instead of keeping only the production as his main focus sound level meters, there was no signal processing after visiting the Yamaha factory in Japan, after seeing offered as standard. The first "integrating sound level with his own eyes how Fender and Gibson were running meters" costed a fortune, something in the ballpark of their businesses in the US. Most people don't go that £10k+ in modern money. Nonetheless, the theory and deep into the nature of guitar making, but they remain the practical lessons I took in those years were perfect at a superficial level, what looks cool, what is used by to understand how the instruments worked. Recently I whom, etc. And this holds true also amongst piano met again one of my former teachers, who was doing a manufacturers, with the exception of Fazioli, who really sort of "historical phonometers" demo, where the investigated and invested time and effort in researching frequency selection filter function of the sound level how to improve the instrument with the aid of science. meter was performed by a whole box of the size of a INT: Knowledge is always added value to improve chest of drawers!

INT: So many years spent studying...

DT: I work on the family business, it took me years constructive way to improve the products. With musical because I can only dedicate a small portion of my time instruments applied acoustics is what makes the to read books, refresh, revise, and to keep my expertise difference. In the past, innovation was a mere trial and up-to-date. Now there is a legal requirement for the error... and what errors! Think of those acoustic guitars "Chartered Acoustician", and I think it's almost too (from the '60s) with adjustable bridges whose little for those who work 100% in the field. The mechanical impedance mismatch and added mass were compulsory training is merely 30h over 8 year. I so much detrimental to the sound of the instruments. genuinely think it's not enough. In fact, everything is Another topic of endless myths and discussion is varnish keep on studying. A more recent experience related to as "transparent lacquer sounds good, black varnish expanding my knowledge in acoustics happened at the sounds dark and bad", and nobody was discussing the beginning of the 2000; we lent some very precious solid real culprit, which is the thickness of the finish! This bodies (Stratocasters) from our own collection, an was not misinformation fuelled by few resellers, on the original '54, a '65, a '79 and a modern one from the contrary, it was "common knowledge", unfortunately '90s for a peculiar investigation. The researchers were totally wrong and lacking any foundation of truth. In all exciting the solid body electric guitar by mean of pink these aspects, I try to keep my curiosity as vivid as noise reproduced by a gigantic loudspeaker positioned possible. close to the guitar which was suspended on springs, and INT: And in the end you keep on studying... they were investigating the eigenmodes and resonances DT: The day my curiosity will fade, I'll retire. Acoustics using a laser vibrometer. Those were quite some is my thing. I have so much to manage within the experiments!

INT: The idea seems so good that it feels almost

doubts about the process. Some manufactures might not Obviously, I'm not an academic, so studying room modes like at all the idea of creating a standard which could, in detail and all those finesses are out of my depth, but in fact, offer the chance to have a purely objective I truly enjoy having technical conversations about evaluation of their products against competitors. Maybe acoustics, have my own opinions, and take informed what was experimented so far was not enough to decisions. And I obviously keep my knowledge up to produce a solid correlation which could be taken as a standard. There is a lot of variables involved, starting IINT: So, a consultancy which didn't sound right from the player, who's not a mechanical device capable of replicating identical gestures on demand, for DT: Absolutely! Eventually we did discuss and planned example. Some players use a pick, some use their things internally, especially regarding insulation fingers or nail, all these aspects alter dramatically the

DT: You're using a very accurate and technical term, but IINT: When I started studying architectural acoustics yes, that's part of the problem as well. I guess designed with different targets of the acoustical truly relevant and, at the same time, capable of to deal with. Even if our technology is much more

people, designers and architects, who were trying to INT: it's quite amazing if you think that you started describe the sound of a venue. In this case it's

mention other instruments) is 100-fold... even more, DT: Well, the funny thing is that a former colleague of we're talking about million and millions of players. Long as IK-Multimedia. They were already whole new field of investigation in acoustics worth

contact with this aspect of research. Surely, new INT: as a matter of fact, such programme in the UK materials land on the market, and they did in the past; capability to measure mechanical parameters such as

applied to audio systems in such venues. I thought it plenty of students. Together with my father we spent the new regulations. A very good aspect of participating as that one, you have the complete panorama of the to this programme was to meet other professionals, traditional methods, from templates to parts, working with jigs and hand tools, everything... We spent hours describing the same story I briefly told you at the electronics that I had to explain to my customers when INT: Really fascinating. I thought the initial interest selling an amplifier head to be matched with a cabinet of the proper electrical impedance (I'm talking about DT: The beginning was architectural acoustics, because I the '90s) and I think of the art of luthiery now... I must products...

DT: It is so relevant when knowledge is used in a volving so fast that it's more important than ever to and types of finish: when I started I heard stories such

Soundscaping? When I studied acoustics, it didn't side table I have my copy of Beranek's book, my even exist as a structured branch of acoustics. Now Spagnolo (not a Spanish language book, the Italian it's really a big thing, especially in the UK.

this measurements of multi-channel audio. Audio Technica of it, it's not so bad for someone who, at first sight, sells a multi-capsule microphone which I'd love to buy you'd call a shrewd guitar seller (laughing)! and connect to a Zoom 8 channel interface to record and learn how to visualise sound intensity, as a way to investigate source localisation and the direction from which sounds arrive to the listening point. A few years ago, something like this was simply impossible, both in terms of cost and practicality. An intensity measurement done with the probe requires too many measurements and time. With this new technique we'd love to find a practical approximation of a measurement of room impulse response over 360 degree in space. Stuff only researchers were tinkering with, now is made possible thanks to new microphone and signal processing technology. But these are just funny ideas.

business, but acoustics is what I read about in my free INT: Do you happen to know anything about time, while I'm off on a Sunday afternoon. On my bedapplied acoustic text!). I'm not a Dr engineer, I know DT: Quite intriguing ideas indeed... I'm curious about my limits, and I'm happy with the choices I made in type of environmental recordings and life. Acoustics is my life-long love, though. If you think

Job Announcements

Acoustics-Vibration Scientist WSP Ireland. Naas, Kildare, Ireland.

Audio Architect Jabra. Ballerup, Denmark

Research Associate - Deep Learning for Speech and Audio Coding Fraunhofer IIS Erlangen, Germany.

Acoustic Consultant - Various Levels Quantum Acoustics. London/Surrey, UK.

PhD in Acoustic Liners Institut Pprime Poitiers, France. Underwater Acoustics Jr. Engineer Heerema Marine Contractors. Leiden, Netherlands.

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Research Associate - Audio and Media Technologies

Fraunhofer IIS. Erlangen, Germany.

Graduate Acoustic Consultant Scotch Partners. London, UK.

PostDoc in Psychophysics/Hearing Modeling IRCAM. Paris, France.

Doctoral scholarship - Urban soundscape

University of Antwerp. Antwerp, Belgium.

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Publications

Smart Blade Count Selection to Align Modal Propagation Angle with Stator Stagger Angle for Low-Noise Ducted Fan Designs

The rotor-stator interaction noise is a major source of fan noise. Especially for low-speed fan stages, the tonal component is typically a dominant noise source. A challenge is to reduce this tonal noise, as it is typically perceived as unpleasant. Therefore, in this paper, we analytically, numerically and experimentally investigate an acoustic effect to lower the tonal noise excitation. Our study on an existing low-speed fan indicates a reduction in tonal interaction noise of more than 9 dB at the source if the excited acoustic modes propagate parallel to the stator leading edge angle. Moreover, a design-to-lownoise approach is demonstrated in order to apply this effect to two new fan stages with fewer stator than rotor blades. The acoustic design of both fans is determined by an appropriate choice of the rotor and stator blade numbers in order to align the modal propagation angle with the stator stagger angle. The blade geometries are obtained from aerodynamic optimization. Both fans provide similar aerodynamic but opposing acoustic radiation characteristics compared to the baseline fan and a significant tonal noise reduction resulting from the impact of the modal propagation angle on noise excitation. To ensure that this effect can also be applied to other low-speed fans, a design rule is derived and validated.

About the Author



Stephen Schade is an early career acoustic researcher based in Berlin. He received his B.Sc. and M.Sc. degree in aerospace engineering from Stuttgart University. Currently, he is working at the German Aerospace Center in the Department of Engine Acoustics. His research focuses on the acoustic design of low-speed ducted fan stages for small airplanes. Moreover, he is working on virtual flyover simulation and auralization tools. He is the project lead of the DLR-funded project, VIRLWINT since 2023 where psychoacoustic characteristics of distributed propulsion systems for urban air mobility airplanes are investigated.



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