

Curriculum



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| Nome Name: | Francesco |
| Cognome Surname: | AVALLONE |

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| ORCID: | 0000-0002-6214-5200 |
| Scopus Author ID: | 55779318600 |
| WOS Author ID: | n.d. |
| Sito WEB WEB site: | https://www.polito.it/personale?p=francesco.avallone |

POSIZIONE PROFESSIONALE ATTUALE / CURRENT PROFESSIONAL POSITION:

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| Posizione attuale Current position: | In servizio |
| Qualifica Qualification: | Professore Ordinario |
| Ateneo/Ente/Azienda University/Institution/Company: | Politecnico di TORINO |
| Nazione Ateneo/Ente/Azienda University/Institution/Company Country: | ITA |
| Anno inizio Start Year: | 2023 |
| Anno fine End Year: | n.d. |

PRECEDENTI ESPERIENZE LAVORATIVE (ULTIMI 10 ANNI) / PREVIOUS WORK EXPERIENCE (LAST 10 YEARS):

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| Qualifica Qualification: | Ricercatore a t.d. - t.pieno (art. 24 c.3-b L. 240/10) |
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| Ateneo/Ente/Azienda University/Institution/Company | Politecnico di TORINO |
| Posizione Sede Lavorativi (indicare Nazione e Città) Workplace Location (specify Country and City): | n.d. |
| Anno inizio Start Year: | 2022 |
| Anno fine End Year: | 2023 |
| Descrizione Description: | |

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| Qualifica Qualification: | Ricercatore a t.d. - t.pieno (art. 24 c.3-b L. 240/10) |
| Ateneo/Ente/Azienda University/Institution/Company | TU Delft |
| Posizione Sede Lavorativi (indicare Nazione e Città) Workplace Location (specify Country and City): | Delft, ZH, Paesi Bassi |
| Anno inizio Start Year: | 2016 |
| Anno fine End Year: | 2022 |
| Descrizione Description: | |

LINGUE / LANGUAGES:

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| Lingua Language: | Inglese |
| Scrittura Writing: | C2 |
| Comunicazione Communication: | C2 |

AREA/SETTORE SCIENTIFICO-DISCIPLINARE / AREA/SECTOR SCIENTIFIC-DISCIPLINARY

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| Area scientifico-disciplinare Area scientific-disciplinary: | Ingegneria industriale e dell'informazione |
| Area scientifico-disciplinare codice Area scientific-disciplinary code: | 09 |
| Settore scientifico-disciplinare codice Sector scientific-disciplinary code: | -Fluidodinamica |
| Settore scientifico-disciplinare codice Sector scientific-disciplinary code: | -IIND-01/F |

**DESCRIZIONE DEI PRINCIPALI RISULTATI SCIENTIFICI
CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI
MASSIMO 10 PUBBLICAZIONI) / DESCRIPTION OF THE MAIN
SCIENTIFIC RESULTS ACHIEVED IN THE LAST 10 YEARS (WITH
ATTACHED LIST OF MAXIMUM 10 PUBLICATIONS):**

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| <p>Descrizione Description:</p> | <p><i>My PhD topic was on transition in hypersonic flows, very different from the one I am currently working on, which is aeroacoustics. During the PhD, I performed IR thermography and the first tomographic PIV measurement of the wake a cylinder on a plate in a free-stream flow at hypersonic Mach number. Since I joined TU Delft as PostDoc in 2015, I focused on understanding, describing, and modelling the physical mechanisms of noise reduction technologies in several fields of aeroacoustics as airfoil self-noise, jet noise, and acoustic liners. I applied my background knowledge to the aeroacoustics field and after only two years, I gave a breakthrough contribution to the aeroacoustics community by describing the physical mechanisms behind the noise reduction with trailing edge serrations; this knowledge has resulted in a novel design, the iron-shaped serration, which still shows the best noise reduction results as reported by a recent measurement campaign for the BANC series of workshop. This was achieved by strongly combining my previous experimental and theoretical knowledge on turbulence, built during the PhD, with the computational expertise built in the years at Delft. The use of the combination of tools is still a big strength in my research approach, as also shown from the published papers on noise reduction with by porous medium. Similarly, I contributed to describe the noise generation mechanisms of a propeller operating at low Reynolds number and to build a benchmark study. In the last years, I focused on the topic of acoustic liners. I performed numerical simulations and experiments in collaboration with Federal University of Santa Catarina (Brazil) and NASA (USA). My research on acoustic liners, supported by the ERC Starting Grant LINING and the Aeroacoustics Research Consortium (AARC), aims at describing the interaction between an acoustic wave and a turbulent boundary layer on an acoustic liner and the impact on the acoustic response. In the last years, I worked in the fields of unsteady aerodynamic noise, noise propagation and fan noise</i></p> |
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PUBBLICAZIONI / PUBLICATIONS:

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| <p>Anno della pubblicazione Year of publication:</p> | <p>2018</p> |
| <p>Citazione Citation:</p> | <p>Avallone F, Van Der Velden W C P, Ragni D, Casalino D (2018). Noise reduction mechanisms of sawtooth and combed-sawtooth trailing-edge serrations. JOURNAL OF FLUID MECHANICS, vol.</p> |

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| | 848, p. 560-591, ISSN: 0022-1120, doi: 10.1017/jfm.2018.377 |
| Anno della pubblicazione Year of publication: | 2021 |
| Citazione Citation: | Casalino D., Grande E., Romani G., Ragni D., Avallone F. (2021). Definition of a benchmark for low Reynolds number propeller aeroacoustics. AEROSPACE SCIENCE AND TECHNOLOGY, vol. 113, ISSN: 1270-9638, doi: 10.1016/j.ast.2021.106707 |
| Anno della pubblicazione Year of publication: | 2019 |
| Citazione Citation: | Damiano Casalino, Francesco Avallone, Ignacio Gonzalez-Martino, Daniele Ragni (2019). Aeroacoustic study of a wavy stator leading edge in a realistic fan/OGV stage. JOURNAL OF SOUND AND VIBRATION, vol. 442, p. 138-154, ISSN: 0022-460X, doi: 10.1016/j.jsv.2018.10.057 |
| Anno della pubblicazione Year of publication: | 2025 |
| Citazione Citation: | Bellelli, Francesco, Arina, Renzo, Avallone, Francesco (2025). On the impact of operating condition and testing environment on the noise sources in an industrial engine cooling fan. APPLIED ACOUSTICS, vol. 227, ISSN: 0003-682X, doi: 10.1016/j.apacoust.2024.110252 |
| Anno della pubblicazione Year of publication: | 2024 |
| Citazione Citation: | Zamponi, R., Avallone, F., Ragni, D., Schram, C., van der Zwaag, S. (2024). Relevance of quadrupolar sound diffraction on flow-induced noise from porous-coated cylinders. JOURNAL OF SOUND AND VIBRATION, vol. 583, ISSN: 0022-460X, doi: 10.1016/j.jsv.2024.118430 |
| Anno della pubblicazione Year of publication: | 2024 |
| Citazione Citation: | Paduano, Angelo, Pereira, Lucas M., Bonomo, Lucas A., Cordioli, Julio A., Casalino, Damiano, Avallone, Francesco (2024). On the Impact of the Acoustic Wave Direction on the In-Orifice Flow Dynamics of an Acoustic Liner Grazed by a Turbulent Flow. In: Titolo volume non avvalorato. American Institute of Aeronautics and Astronautics, Inc., doi: 10.2514/6.2024-3122 |
| Anno della pubblicazione Year of publication: | 2023 |
| Citazione Citation: | Furkat Yunus, Damiano Casalino, Francesco Avallone, Daniele Ragni (2023). Efficient prediction of urban air mobility noise in a vertiport environment. AEROSPACE SCIENCE AND TECHNOLOGY, vol. 139, ISSN: 1270-9638, doi: 10.1016/j.ast.2023.108410 |

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| Anno della pubblicazione Year of publication: | 2023 |
| Citazione Citation: | Livia Brandetti, Francesco Avallone, Delphine De Tavernier, Bruce LeBlanc, Carlos Simão Ferreira, Damiano Casalino (2023). Assessment through high-fidelity simulations of a low-fidelity noise prediction tool for a vertical-axis wind turbine. JOURNAL OF SOUND AND VIBRATION, vol. 547, ISSN: 1095-8568, doi: 10.1016/j.jsv.2022.117486 |

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| Anno della pubblicazione Year of publication: | 2022 |
| Citazione Citation: | Grande, Edoardo, Ragni, Daniele, Avallone, Francesco, Casalino, Damiano (2022). Laminar Separation Bubble Noise on a Propeller Operating at Low Reynolds Numbers. AIAA JOURNAL, vol. 60, p. 5324-5335, ISSN: 0001-1452, doi: 10.2514/1.J061691 |

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| Anno della pubblicazione Year of publication: | 2021 |
| Citazione Citation: | C. Teruna, F. Avallone, D. Ragni, A. Rubio-Carpio, D. Casalino (2021). Numerical analysis of a 3-D printed porous trailing edge for broadband noise reduction. JOURNAL OF FLUID MECHANICS, vol. 926, ISSN: 1469-7645, doi: 10.1017/jfm.2021.704 |

DESCRIZIONE DEI PRINCIPALI PROGETTI DI RICERCA E PREMI CONSEGUITI NEGLI ULTIMI 10 ANNI (CON ANNESSO ELENCO DI MASSIMO 10 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PRINCIPAL INVESTIGATOR O COORDINATORE LOCALE DI PROGETTI DI RICERCA COMPETITIVI NAZIONALI O INTERNAZIONALI, SIGNIFICATIVI PREMI CONSEGUITI PER LA PROPRIA ATTIVITÀ DI RICERCA)/ DESCRIPTION OF THE MAIN RESEARCH PROJECTS AND AWARDS AWARDED IN THE LAST 10 YEARS (WITH ATTACHED LIST OF MAXIMUM 10 ACHIEVEMENTS, INCLUDING, FOR EXAMPLE, PRINCIPAL INVESTIGATOR OR LOCAL COORDINATOR OF NATIONAL OR INTERNATIONAL COMPETITIVE RESEARCH PROJECTS, SIGNIFICANT AWARDS AWARDED FOR YOUR RESEARCH ACTIVITY):

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| Descrizione Description: | <i>During my academic career, I have worked on several national and international projects. At the beginning of my career, I applied to projects mainly as co-applicant/co-PI (see, for example, the IPERMAN and AMPERE projects listed below) or as collaborator (see SMART-ROTOR, INVENTOR for example). For the latter, I had mainly the responsibility of some numerical activities (propeller noise for the first project and landing gear noise with low-noise technologies for the latter). Recently, I have been granted, as PI, the</i> |
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| | <p><i>ERC Starting Grant LINING, one of the most prestigious grant in Europe, to discover and describe the flow acoustic interaction over an acoustic liner. On the same line of research, I have been granted two research proposals as PI from the Aeroacoustics Research Consortium (AARC), a consortium constituted by NASA, Rolls Royce, Honeywell, Raytheon Technologies Research Center, Pratt and Whitney and Airbus Commercial Aircraft, to use both numerical simulations and experiments to describe the flow-acoustic interaction over an acoustic liner. In addition to research projects, I am also PI of the Erasmus Mundus Design Measure project MA2 (started in January 2024), that aims at designing an Erasmus Mundus Joint Programme on Aeroacoustics. I will collaborate with DTU (Denmark) and ECL (France) to design such a MSc track.</i></p> |
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| Descrizione Description: | 2024 - PI of the ERASMUS MUNDUS DESIGN MEASURE MA2 project (grant agreement 101128001) |
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| Descrizione Description: | 2023 - PI of ERC Starting Grant LINING (grant Agreement 101075903). |
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| Descrizione Description: | 2021 - PI of the project OAI-AARCD-22671 supported by Aeroacoustics Research Consortium (AARC) (https://oai.org/aeroacoustics/) |
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| Descrizione Description: | 2020 - PI of the project OAI-AARCD-20159 supported by Aeroacoustics Research Consortium (AARC) (https://oai.org/aeroacoustics/) |
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| Descrizione Description: | 2024 - Co-applicant of the NWO - OTP project AMPERE (consortium agreement to be signed). |
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| Descrizione Description: | 2022 - Principal applicant for TU Delft of the Clean Aviation granted proposal HERWINGT. Invited to participate to the hearing session. WP Level 2 leader before I left TU Delft. |
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| Descrizione Description: | 2021 - Participant to X-ROTOR (X-shaped Radical Offshore wind Turbine for Overall cost of energy Reduction, grant number 101007135). |
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| Descrizione Description: | 2020 - Participant INVENTOR (INnoVative dEsign of iNstalled airframe componenTs for aircraft nOise Reduction, grant number 860538). |
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| Descrizione Description: | 2020 - Participant SMART ROTOR European Regional Development Found (EFRO, grant |
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| | number SA.59824 (2020/X)). |
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| Descrizione Description: | 2017 - Co-applicant of the project IPERMAN (Innovative Permeable Material for Noise Reduction in Aircraft and Wind Turbine, grant number NWO 15452). |
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DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SVILUPPO DI RETI E RELAZIONI SCIENTIFICHE NAZIONALI E INTERNAZIONALI (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, PARTECIPAZIONE O ORGANIZZAZIONE DI CONVEGNI NAZIONALI E INTERNAZIONALI; CONTRIBUTI A CONSORZI DI RICERCA) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF DEVELOPMENT OF NATIONAL AND INTERNATIONAL SCIENTIFIC NETWORKS AND RELATIONS (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING, FOR EXAMPLE, PARTICIPATION OR ORGANIZATION OF NATIONAL AND INTERNATIONAL CONFERENCES; CONTRIBUTIONS TO RESEARCH CONSORTIA):

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| Descrizione Description: | <i>Since the beginning of my career, I have participated to several international conferences (I co-authored more than 50 conference paper) both as speaker and invited speaker. For example, I gave the opening keynote lecture "(Aero)Acoustics Challenges in Future Smart Cities" at the 12th Ibero-American Acoustic Conference in 2022 in Florianapolis, Brazil and a keynote talk "Post-processing methods to extract the acoustic-induced velocity within the orifice of a conventional acoustic liners grazed by a turbulent flow and acoustic wave" during the CFC2023 conference in Cannes, France. Recently, I have organized 2 conferences (DICUAM 2021 and DICUAM2022), 1 symposium (Feri Farassat Memorial Symposium) and 1 workshop (Noise Reduction Technologies with Meta-materials). In 2024, there will be the DICUAM 2024 conference where I will be part of the scientific committee. On 2018, I was the leader of the Category IX of the BANC series of workshop where I provided reference experimental data of propeller wing interaction, that were compared with numerical data delivered by several research groups.</i> |
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| Descrizione Description: | 2023 - Feri Farassat Memorial Symposium, Capri, Italy, Organizing Committee |
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| Descrizione Description: | 2022 - DICUAM 2022, Delft (The Netherlands) and online, Organizing Committee |
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| Descrizione Description: | 2021 - DICUAM 2021, online conference, Organizing Committee |
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| Descrizione Description: | 2020 - Noise Reduction Technologies with Meta-materials, Leiden, The Netherlands, Scientific Organizer |
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DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI DI SUPPORTO ALLA COMUNITÀ SCIENTIFICA (CON ANNESSO ELENCO DI MASSIMO 5 RISULTATI, INCLUDENDO, A TITOLO DI ESEMPIO, RESPONSABILITÀ DI DIREZIONE DI COMITATI EDITORIALI; INCARICHI DI VALUTAZIONE DELLA RICERCA PRESSO ISTITUZIONI NAZIONALI O INTERNAZIONALI; RESPONSABILITÀ ISTITUZIONALI ALL'INTERNO DELL'ISTITUZIONE DI APPARTENENZA O DI ALTRE ISTITUZIONI) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF SUPPORT TO THE SCIENTIFIC COMMUNITY (WITH ATTACHED LIST OF MAXIMUM 5 RESULTS, INCLUDING, FOR EXAMPLE, MANAGEMENT RESPONSIBILITIES OF EDITORIAL COMMITTEES; RESEARCH EVALUATION ROLES AT NATIONAL OR INTERNATIONAL INSTITUTIONS; INSTITUTIONAL RESPONSIBILITIES WITHIN THE INSTITUTION OF AFFILIATION OR OTHER INSTITUTIONS):

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| Descrizione Description: | <i>I am member of the Editorial Board of the journal Wind Energy (Wiley) since 2018. During the time I worked at Delft University of Technology, I was profile leader of the European Wind Energy Master (EWEM) and Wind Energy MSc tracks. As profile leader I coordinated the activities of the students. As additional form of support to the scientific community, I have been board member of the Delft Young Academy (DYA) in 2022. The DYA has the purpose of promoting the exchange of opinions and ideas, fostering collaborations, discussing (societal and university-related) issues of interest to these academics, and voicing the opinion of the DYA community in discussions with relevant stakeholders, including the Executive Board (EB) of TU Delft. Since 2023, I am fellow of the Young Academy of Europe (YAE), that is organised as a bottom-up initiative of a dynamic and innovative group of recognised European young scholars with outspoken views about science and science policy.</i> |
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| Descrizione Description: | 2022 - 2023 - Board Member of the Delft Young Academy |
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| Descrizione Description: | 2023 - Fellow Young Academy of Europe |
| Descrizione Description: | 2020 - Expert evaluator for Clean Sky 2, Joint Undertaking |
| Descrizione Description: | 2018 - Editorial Board for Wind Energy, Wiley |
| Descrizione Description: | 2017 - Expert evaluator for ANR (French National Research Agency) |

DESCRIZIONE DEI PRINCIPALI RISULTATI CONSEGUITI NEGLI ULTIMI 10 ANNI IN TERMINI VALORIZZAZIONE DELLE CONOSCENZE (CON ANNESSO ELENCO DI MASSIMO 3 RISULTATI, RELATIVI ALLA PARTECIPAZIONE DEL CANDIDATO ALLE ATTIVITÀ DI VALORIZZAZIONE DELLE CONOSCENZE) / DESCRIPTION OF THE MAIN RESULTS ACHIEVED IN THE LAST 10 YEARS IN TERMS OF KNOWLEDGE VALORIZATION (WITH ATTACHED LIST OF MAXIMUM 3 RESULTS, RELATING TO THE CANDIDATE'S PARTICIPATION IN KNOWLEDGE VALORIZATION ACTIVITIES):

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| Descrizione Description: | <i>As researcher in technical disciplines, I have always worked with the aim to design novel concepts based on the scientific findings of the research I carried out in collaboration with my colleagues. As a consequence, I submitted three patent applications, two of which are listed below, all describing innovative noise reduction technologies. Furthermore, I am co-founder of the start-up Mutech, located in the Netherlands, that develops novel noise reduction technologies for trailing edge noise with focus on wind energy applications. The start-up is now in the final stage of testing the new engineering concepts.</i> |
| Descrizione Description: | 2022 - present: Co-founder Mutech (https://muteskin.eu/) |
| Descrizione Description: | Luesutthiviboon, S., Rego, L., Ragni, D., Avallone, F., Snellen, M., van der Zwaag, S. & Casalino, D., 2020, IPC No. B64D, B64C, Priority date 31 Mar 2022, Priority No. WO 2022/066001 |
| Descrizione Description: | Ragni, D., van der Zwaag, S., Avallone, F., Rubio Carpio, A. & Snellen, M., 2021, IPC No. F03D, Priority date 15 Jun 2020, Priority No. WO 2021/256920 |

Informazioni aggiornate alla data di candidatura 04-06-2025

Francesco AVALLONE

Il presente curriculum costituisce allegato e parte integrante dell'incarico sottoscritto