Francesco Ambrogi

PhD, Assistant Professor
Department of Mechanical and Materials Engineering
Queen's University
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EDUCATION

Ph.D. in Mechanical Engineering — Kingston, Canada
Queen's University — Jun. 2024

M.Sc. in Energy and Nuclear Engineering — Bologna, Italy
Alma Mater Studiourum University of Bologna — Mar. 2019

B.Sc. in Mechanical Engineering — Modena, Italy
University of Modena and Reggio Emilia "Enzo Ferrari" — Apr. 2015

ACADEMIC APPOINTMENTS

Assistant Professor — May 2025 - Present
Queen's University

Adjunct Assistant Professor — Sep. 2024 - Apr. 2025
Queen's University

Postdoctoral Research Fellow — Jun. 2024 - Aug. 2024
University of Waterloo

Research Assistant — Jan. 2024 - May. 2024
University of Waterloo

Adjunct Assistant Professor — Aug. 2023 - May. 2024
The Royal Military College of Canada

Adjunct Assistant Professor — Jan. 2024 - May. 2024
Queen's University

Adjunct Assistant Professor — Jan. 2023 - May. 2023
Queen's University

Teaching Fellow — Jan. 2022 - May. 2022
Queen's University

PUBLICATIONS IN PEER-REVIEWED JOURNALS

1. J.P. Hickey, **F. Ambrogi**, S. Hillcoat, J. Joseph, L. Nipin. ARC4CFD: Learning how to leverage High-Performance Computing with Computational Fluid Dynamics. *Journal of Open-Source Education*, 8 (87) 252, 2025
2. **F. Ambrogi**, U. Piomelli, D.E. Rival. Influence of time-varying freestream conditions on the dynamics of unsteady boundary-layer separation. *AIAA Journal*, 62 (10) pp. 3662-3671, 2024
3. C.Y. MacDougall, U. Piomelli, **F. Ambrogi**. Evaluation of Turbulence Models in Unsteady Separation. *Fluids*, 8 (10) 273, 2023
4. **F. Ambrogi**, U. Piomelli, D.E. Rival. Characterisation of unsteady separation in a turbulent boundary layer: Reynolds stresses and flow dynamics. *Journal of Fluid Mechanics*, 972 A36, 2023
5. **F. Ambrogi**, U. Piomelli, D.E. Rival. Characterization of unsteady separation in a turbulent boundary layer: mean and phase-averaged flow. *Journal of Fluid Mechanics*, 945 A10, 2022

MANUSCRIPTS UNDER REVIEW AND PREPARATION

SELECTED CONFERENCE PAPERS

1. C.Y. MacDougall, **F. Ambrogi**, U Piomelli. Unsteady separation. *Progress in Turbulence X: Proceedings of the iTi Conference on Turbulence*, Bertinoro (Italy), 2024
2. **F. Ambrogi**, U. Piomelli, D.E. Rival. Dynamics of Turbulent Kinetic Energy Advection in a Turbulent Boundary Layer Under Unsteady Pressure Gradients. *ERCOFTAC Workshop Direct and Large Eddy Simulation*, Udina (Italy), 2023
3. **F. Ambrogi**, U. Piomelli, D. E. Rival. Large-eddy simulation of a turbulent boundary layer with unsteady pressure gradients. *Twelfth International Symposium on Turbulence and Shear Flow Phenomena (TSFP12)*, Osaka (Japan), 2022

SELECTED ORAL PRESENTATIONS

1. **F. Ambrogi**. Influence of time-varying freestream conditions on the dynamics of unsteady boundary-layer separation. Mechanical and Aeronautial engineering seminar series at RMC, Kingston, 2024 (**invited**)
2. **F. Ambrogi**. Characterization of a unsteady flow separation on a turbulent boundary layer. Intelligent and Bio-inspired Mechanics seminar series at Westlake University, China, 2024 (**invited**)
3. **F. Ambrogi**, U. Piomelli, D.E. Rival. Influence of time-varying freestream conditions on the unsteady separation of a turbulent boundary layer. 76th APS DFD, Washington DC, 2023

4. **F. Ambrogi**, U. Piomelli, D.E. Rival. Frequency dependence of unsteady separation in a turbulent boundary layer. 75th APS DFD, Indianapolis (IN), 2022

5. **F. Ambrogi**, U. Piomelli, D.E. Rival. Large-Eddy Simulation of a Boundary Layer with Unsteady Pressure Gradient. 74th APS DFD, Phoenix (AZ), 2021

TEACHING AWARDS

Golden Apple Award (Queen's University) 2025
Most Approachable Professor (MRE program Queen's) 2025
Silver Wrench Award (MME department Queen's) 2025
Silver Wrench Award (MME department Queen's) 2024
Silver Wrench Award (MME department Queen's) 2023
Champion for Mental Health (Queen's University) 2022
Bronze Wrench Award (MME department Queen's) 2022
Dean's Teaching Assistant award (Queen's University) 2022

OTHER AWARDS & HONORS

Young Leadership Award (Rotary International) 2022

TEACHING EXPERIENCE

Developer:

1. ARC4CFD: Advanced Research Computing for Computational Fluid Dynamics - Winter 2024

Lecturer:

1. Fluid mechanics I (Queen's University) - Winter 2022, 2023, 2024
2. Fluid dynamics (The Royal Military College of Canada) - Fall 2023
3. Advanced fluid dynamics (The Royal Military College of Canada) - Winter 2024
4. Applied Thermodynamics II (Queen's University) - Fall 2024
5. Fluid mechanics and fluid power (Queen's University) - Fall 2024 (**present**)
6. Thermodynamics and Heat Transfer (Queen's University) - Winter 2025 (**present**)
7. Computational FLuid Dynamics (Queen's University) - Winter 2025 (**present**)

Teaching Assistant:

1. Fluid mechanics I (Queen's University)
2. Fluid mechanics II (Queen's University)
3. Airflow in pipes (laboratory) (Queen's University)

SUPERVISING & MENTORING EXPERIENCES

Mentored students:

1. Claire MacDougall (M.S. student) Queen's University, 2022-2023
2. Michael Kelly (B.S. student) Queen's University, 2022-2023

Undergraduate supervision:

1. Ahnaaf Khan (B.S. student) Queen's University, 2025-2026
2. Antony Morales (B.S. student) Queen's University, 2025-2026

Graduate supervision:

PROFESSIONAL SERVICE

- **Reviewer:** Journal of Fluid Mechanics, ACTA Mechanica
- **Undergraduate student advisor**, Queen's University, 2025-present
- **Faculty advisor**, Queen's University, 2025-present

AFFILIATIONS

Professional affiliations:

- American Physical Society (APS)

Community affiliations:

- Rotary International