Kursat Kara, Ph.D.

Associate Professor, School of Mechanical & Aerospace Engineering, Oklahoma State University

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Citizenship: U.S. Citizen

Appointments and Positions

2025 –	Associate Professor, School of Mechanical and Aerospace Engineering, OSU, Stillwater, OK.
2019 – 2025	Assistant Professor, School of Mechanical and Aerospace Engineering, OSU, Stillwater, OK.
2018 – 2019	Visiting Professor, Mechanical Engineering Department, University of Wyoming, Laramie, WY.
2010 – 2018	Assistant Professor, Aerospace Engineering Department, Khalifa University, Abu Dhabi, UAE.
2008 – 2009	Aerodynamics/CFD Engineer, New England Analytics LLC, Shelton, CT, US.

Professional Preparation

2009 – 2010	Post. Doc.	Penn State University, PA	Aerospace Engineering
2003 – 2008	Ph.D.	Old Dominion University, VA	Aerospace Engineering
2000 – 2003	M.Sc.	Istanbul Technical University, Turkey	Aeronautical Engineering
1995 – 1999	B.Sc.	Istanbul Technical University, Turkey	Aeronautical Engineering

Grants (Requested: $24.45 million, Awarded: $2,24 million, Funds to Self: $758,160)

- **PI**, $70,000 (100%), IBM Quantum, Exploring Quantum Computing Paradigms for Fluid Dynamics, 2025.
- **PI**, $649,879 (62%), NASA Early Stage Innovations (ESI22), Physics-Guided Multifidelity Learning for Characterization of Blunt-Body Dynamic Stability, 2023 – 2026, Award Number 80NSSC23K0231.
- **Co-PI**, $1,490,043 (20%), NSF NRI: INT: Safe Wind-Aware Navigation for Collaborative Autonomous Aircraft in Low Altitude Airspace, 2020 – 2023. Award Number: 1925147.
- **Co-PI**, $15,994 (50%), Research Experience for Undergraduates (REU) supplement, NSF NRI INT, 1925147.
- **PI**, $29,963 (100%), NASA Oklahoma EPSCoR Research Initiation Grant 2022, Direct Numerical Simulation of Broadband Acoustic Metasurfaces to Stabilize Acoustic Modes in Hypersonic Boundary Layer, 2022 – 2023.
- **Co-PI**, $45,000 (33%), OCAST AR20-020, Next Generation Smart Heatsinks, 2021 – 2022.
- **PI**, $1,618.76 (100%), NASA EPSCoR, Hypersonic Boundary-Layer Receptivity to Solid Particulates, 2019.

Professional Activities and Leadership Roles

- Chair of Organizing Committee, Quantum Computing Event: Qiskit Fall Fest at OSU, Nov 9, 2024.
- Chair of the Mechanical Engineering Faculty Search Committee (2023 – 2024).
- Conference Co-Chair, AIAA AVIATION 2020, Applied Aerodynamics Conference, A Virtual Event.
- Conference Co-Chair, 40th AIAA/ASME Symposium, Stillwater, OK, Apr 3, 2021.
- Regular Technical Report Judge in AIAA Design, Build, Fly Competition (28 Reports)
- Judge, Annual MAE Graduate Research Symposium
- CEAT Excellent Teacher Award Nomination by the MAE Award Committee, Jan 2024
- Reviewer, Naval Research Laboratory, Post-Doc Fellowship – Quantum Computing (2024)
- Reviewer: 12th International High-Performance Computing Summer School, Jul 9-14, 2023, Atlanta, Georgia, hosted by the NSF Extreme Science and Engineering Discovery Environment, Mar 1, 2023 (10 proposals)
- Review Panel: NSF ACCESS Allocation Review Committee (2022 –) (27 proposals)
- Review Panel: NSF NAIRR Pilot Review Committee (2024 – date)
- Review Panel: NASA 2024 Next Gen STEM (NGS) Teams Engaging Affiliated Museums and Informal Institutions (TEAM II) STEM Innovator (TEAMIIIINOV), 12/04/2024. (3 proposals)

- Review Panel: DOE, ASCR, Multiscale Mathematics for the Modeling & Simulation of Complex Systems, 03/16/2022.
- Reviewer in annual AIAA SciTech and Aviation conferences (33 papers)
- Session Chair in annual AIAA SciTech and Aviation conferences.
- Senior Member, American Institute of Aeronautics and Astronautics (AIAA)
- Member, AIAA Applied Aerodynamics Technical Committee (2012-2021)
    - Member, AIAA APATC Membership Subcommittee
    - Member, AIAA APATC Education Subcommittee
- Member, AIAA Uncrewed and Autonomous Systems Integration and Outreach Committee (UASIC) (2024 –)
- Guest Editor for the Quantum Computing Collection – Nature Scientific Reports (2024 – date)
- Member of Editorial Board of the Nature Scientific Reports (2023 – date)
- Member of the Executive Committee (NUGEX) of the National Energy Research Scientific Computing (NERSC) Users Group (NUG) (2022 - date)
- Member of the National Center for Atmospheric Research (NCAR) High-Performance Computing User Group (NHUG) (2021 - date)
- Member of PhD (12) and MSc (10) student committees.

Selected Publications (&Graduate Student and &&Undergraduate Student supervised in Kara's group)
(30 peer-reviewed journal articles, 42 peer-reviewed conference proceedings, 61 conference abstracts and posters)

- &Shafi Romeo, &Furkan Oz, &Ashraf Kassem, **Kursat Kara**, and Omer San. An augmented physics informed neural network approach for blunt-body dynamics. *Physics of Fluids*, 36, no. 1 (2024).
- &Vuppala, R. K., Krawczyk, Z., Paul, R., and **Kara, K.** (2024). Modeling advanced air mobility aircraft in data-driven reduced-order realistic urban winds. *Scientific Reports*, 14(1), 383.
- &Oz, F., &&Goebel, T. E., Jewell, J. S., and **Kara, K.** (2023). Local wall cooling effects on hypersonic boundary-layer stability. *Journal of Spacecraft and Rockets*, 60(2), 412-426.
- &Oz, F., San, O., and **Kara, K.** (2023). An efficient quantum partial differential equation solver with Chebyshev points. *Scientific Reports*, 13(1), 7767.
- &&Landua, T. R., &Vuppala, R. K. S. S., and **Kara, K.** (2022). Investigation of Airflow around Buildings using Large Eddy Simulations for Unmanned Air Systems Applications. *AIAA SciTech Forum 2022*. (p. 1688).
- &Vuppala, R. K., and **Kara, K.** (2022). A non-intrusive reduced order model using deep learning for realistic wind data generation for small unmanned aerial systems in urban spaces. *AIP Advances*, 12(8).
- &Oz, F., &Vuppala, R. K., **Kara, K.**, and Gaitan, F. (2022). Solving Burgers' equation with quantum computing. *Quantum Information Processing*, 21, 1-13.

Highlights (&Graduate Student and &&Undergraduate Student supervised in Kara's group)

- Kursat Kara, **CEAT Excellent Faculty Award**, 2025.
- Since 2019, 24 undergraduate students have worked in the Kara Lab.
- &&Peyton Pierson, **1st Place**, **Best Undergraduate Poster Presentation**, 5th Annual MAE GRS, 2023.
- &&Tuyen Nguyen, **3rd Place**, **Best Undergraduate Poster Presentation**, 5th Annual MAE GRS, 2023.
- &Furkan Oz, **Best Oral Presentation**, 5th Annual MAE Graduate Research Symposium, 2023.
- &Rohit Vuppala, **Best Graduate Poster Presentation**, 5th Annual MAE Graduate Research Symposium, 2023.
- &Shafi Romeo, **Internship at NASA Ames Research Center**, Summer 2024
- &Ashraf Kassem, **Internship at NASA Ames Research Center**, Summer 2024
- &Furkan Oz, **Internship at NASA Ames Research Center**, Summer 2023
- &Rohit Vuppala, **Internship at Los Alamos National Laboratory**, Summer 2023.
- &Rohit Vuppala, **Roy and Virginia Dorrough Distinguished Graduate Fellowship**, 2022 and 2023.