



Anupam Sharma

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Education

- Ph.D.** Aerospace Engineering, The Pennsylvania State University, 2004
- M.S.** Aerospace Engineering, The Pennsylvania State University, 2001
- B. Tech.** Aerospace Engineering, Indian Institute of Technology (Bombay), 1999

Academic Appointments

- Iowa State University (2012-present)**
Department of Aerospace Engineering
 - Associate Professor, July 2018 - present
 - Assistant Professor, Jan 2012 - July 2018
 - Walter Wilson Faculty Fellow, Jan 2012 - July 2018
- University of Cambridge (2010)**
Department of Engineering
 - Visiting Scholar, Oct – Nov 2010

Awards and Honors

- Associate Fellow of American Institute of Aeronautics and Astronautics (AIAA).
- US Air Force Summer Faculty Fellowship (2019 & 2016).
- NSF Early CAREER award, 2016.
- Renewable Energy Impact from Iowa Energy Center, 2014.
- Technology Project of the Year Award, General Electric Company, 2012.
- Outstanding Research Award, Vertical Flight Foundation, 2000.

Teaching

UNDERGRAD: AerE/ME 448 Fluid Dynamics of Turbomachinery, AerE 411 Propulsion of Aerospace Vehicles, AerE 311 Aerodynamics II, EM 451 Engineering Acoustics.

GRADUATE: AerE 583X Aeroacoustics, WESEP 501X Wind Energy Resources (20%).

Research

Interest Areas:

- Aeroacoustics: turbomachinery noise, wind turbine noise, bioinspired designs for noise mitigation
- Wind turbines: aeromechanic performance, novel turbine concepts, inverse design methods
- Dynamic stall: numerical modeling and mitigation techniques

Sponsored Grants: \$1.58 M total from 12 grants including 3 federal (NSF, DOE), 5 state, 4 industry

Selected Publications (of 63 pubs. Including 22 journals, 0 book chapters, 0 books, 0 patents, 32 conf. proceedings; h-index (Google): 12)

1. **A. Sharma** and M. Visbal, (2019). "Numerical investigation of the effect of airfoil thickness on onset of dynamic stall," *Journal of Fluid Mechanics*, Vol 870.
2. A. Bodling and **A. Sharma**, (2019). "Numerical Investigation of Noise Reduction Mechanisms in a Bio-inspired Airfoil," *Journal of Sound & Vibration*, Vol. 453.
3. A. Bodling and **A. Sharma**, (2018). "Numerical investigation of low-noise airfoils inspired by the down coat of owls," *Bioinspiration and Biomimetics*, Vol 14, No. 1.
4. B. Moghadassian and **A. Sharma**, (2018). "Inverse Design of Single- and Multi-Rotor Horizontal Axis Wind Turbine Blades using Computational Fluid Dynamics," *ASME J. Solar Energy Engineering*, Vol. 140, No. 2.
5. B. Agrawal and **A. Sharma**, (2016). "Numerical Analysis of Aerodynamic Noise Mitigation via Leading Edge Serrations for a Rod-Airfoil Configuration," *International Journal of Aeroacoustics*, Vol. 15, No. 8, pp. 734-756.
6. Z. Wang, and W. Tian, A. Ozbay, **A. Sharma**, and H. Hu, (2016). "An Experimental Study on the Aeromechanics and Wake Characteristics of a Novel Twin-Rotor Wind Turbine in a Turbulent Boundary Layer Flow," *Experiments in Fluids*, Vol. 57.
7. A. Rosenberg, and **A. Sharma**, (2016). "A Prescribed-Wake Vortex Lattice Method for Preliminary Design of Co-Axial, Dual-Rotor Wind Turbines," *ASME J. Solar Energy Engineering*, Vol. 138, Issue 6.
8. L. Chen, C. Harding, **A. Sharma**, and E. MacDonald, (2016). "Modeling Noise and Lease Soft Costs Improves Wind Farm Design and Cost-of-Energy Predictions," *Renewable Energy*, Vol. 97, pp 849-859.
9. H. Ju, R. Mani, M. Vysohlid, and **A. Sharma**, (2015). "Investigation of Fan-Wake/Outlet-Guide-Vane Interaction Broadband Noise," Vol. 53, No. 12, *AIAA Journal*, pp. 3534-3550.
10. F. Han, **A. Sharma**, U. Paliath, and C. Shieh, (2014). "Multiple Pure Tone Noise Prediction," Vol. 233, No. 25, *Journal of Sound and Vibration*, pp. 6942-6959.
11. A. Rosenberg, S. Selvaraj, and **A. Sharma**, (2014). "A Novel Dual-Rotor Turbine for Increased Wind Energy Capture", *Journal of Physics: Conference Series*, Vol. 524.
12. **A. Sharma** and Hsuannien Chen, (2013). "Prediction of Tonal Aerodynamic Noise from Open Rotors" *Journal of Sound and Vibration*, Vol. 332, No. 16, pp. 3832-3845.
13. **A. Sharma**, S. K. Richards, T. H. Wood, and C. M. Shieh, (2009). "Numerical Prediction of Fan Tone Interaction Noise from High Bypass Aircraft Engines," *AIAA Journal*, Vol. 47, No. 12, pp. 2866-2878.
14. N. Sezer-Uzol, **A. Sharma** and L. N. Long, (2005). "Computational Fluid Dynamics Simulations of Ship Airwake," Proceedings of the I Mech E, Part G, *Journal of Aerospace Engineering*, Vol. 219, No. 5, pp. 369-392.
15. **A. Sharma** and L. N. Long, (2004). "Numerical Simulation of the Blast Impact Problem using the Direct Simulation Monte (DSMC) Carlo Method," *Journal of Computational Physics*, Vol. 200, No. 1, pp. 211-237.
16. F. Souliez, L. N. Long, P. J. Morris, and **A. Sharma**, (2002). "Landing Gear Aerodynamic Noise Prediction Using Unstructured Grids," *International Journal of Aeroacoustics*, Vol. 1, No. 2, pp. 115-135.
17. **A. Sharma** and N. Ananthkrishnan, (2001). "Passage Through Resonance of Rolling, Finned Projectiles with Center-of-Mass Offset," *Journal of Sound and Vibration*, Vol. 239, No. 1, pp. 1-17.
18. **A. Sharma** and N. Ananthkrishnan, (2000). "Large-Amplitude Limit Cycles via a Homoclinic Bifurcation Mechanism," *Journal of Sound and Vibration*, Vol. 236, No. 4, pp. 725-729.

Thesis Advisor/Co-advisor and Postgraduate-Scholar Sponsor

Postgraduate-Scholar (1): B. Moghadassian

Doctoral (3): A. Rosenberg (2016), B. Moghadassian (2018), A. Bodling (2019)

Masters (5): S. Selvaraj (2014), B. Agrawal (2015), A. Bodling (2017), X. Wu (2017), V. Vijay (2017)

Professional and Outreach Activities

- American Institute of Aeronautics and Astronautics: Associate Fellow (2018-current), Aeroacoustics Technical Committee (2008-2011 and 2017-current),
- North American Wind Energy Academy: Conference (2012-present),
- Member of ASME (2012-current), NAWEA (2015-current)
- Scientific Committees of Conferences: International (2), National (1);
- Organized and Chaired/Co-chaired: 2017 NAWEA meeting
- Session Chairs at Conferences: AIAA Aviation, SciTech, NAWEA
- Editorial Board Member of 1 Journal: International Journal of Aeroacoustics
- Reviewer: (10 Journals, NSF, DOE, DoD);
- Faculty adviser for the ISU AIAA student chapter (2012 – current)