Chirag Gokani

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Education

- **University of Texas at Austin** August 2021–May 2026
  - Ph.D. Candidate, Mechanical Engineering, GPA 4.0

- **University of Texas at Dallas** August 2017–May 2021
  - B.S. Physics, Minor in Music, Magna Cum Laude, Collegium V Honors, GPA 3.897

Experience

- **Graduate Research Assistant** 2021–2026
  - Studying topics in physical acoustics under the supervision of Profs. Michael Haberman and Mark Hamilton in the Walker Department of Mechanical Engineering and Applied Research Laboratories
  - Dissertation: *Scattering and diffraction of acoustic waves in three problems with broken symmetry*
  - Chair, Austin Student Chapter of ASA (2024–2025)

- **Acoustical Society of America** 2023–2026
  - As Student Council Chair (2025–2026), promoted interests of students and organized student-related activities at meetings
  - As Biomedical Acoustics Technical Committee Student Rep (2023–2025), reported on student activities at Technical Committee meetings and managed website

- **Webmaster, 25th International Congress on Acoustics** 2025
  - Designed and maintained conference website

- **Teaching Assistant** 2020
  - Instructed a section of the sophomore-level Electromagnetism and Waves lab in the Department of Physics, UT Dallas

- **Undergraduate Research Assistant, ARTS Lab, UT Dallas** Summer 2019
  - Assisted with rheometry experiments supporting Diana Alatalo's dissertation

- **Pre-freshman research experience, UT Dallas** Summer 2017
  - Studied perturbative effects of tertiary black holes on gravitational waves under the supervision of Prof. Michael Kesden

Honors & Awards

- **Chester M. McKinney Graduate Fellowship in Acoustics** 2022–2026
  - Awarded by the Applied Research Laboratories at UT Austin for support in acoustics research
- **T. W. Whaley, Jr. Friends of Alec Endowed Scholarship** 2021–2022
  - Awarded by the Cockrell School of Engineering at UT Austin
- **Eugene McDermott Scholar** 2017–2021
  - One of twenty-three undergraduates selected for flagship scholarship at UT Dallas

Publications

3. C. A. Gokani, R. P. Williams, M. R. Haberman, M. F. Hamilton. "An alternative approach to modeling radiation from baffled circular pistons (L)," *J. Acoust. Soc. Am.*, **158**, 2642–2646 (2025).

2. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Analytical solutions for acoustic vortex beam radiation from planar and spherically focused circular pistons," *JASA Express Lett.* **4**, 124001 (2024). Editor's choice.

1. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Paraxial and ray approximations of acoustic vortex beams," *J. Acoust. Soc. Am.* **155**, 2707–2723 (2024).

Conference proceedings

3. C. A. Gokani and M. R. Haberman, "Acousto-electromagnetic media: Homogenization and constraints," *2025 Nineteenth International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, Amsterdam, Netherlands, X-135–X-137 (2025).

2. P. G. Kaufinger, C. A. Gokani, M. F. Hamilton, "Creative ways to study for an acoustics qualifying exam," *Proc. Mtgs. Acoust.* **56**, 025001 (2025).

1. C. A. Gokani, T. S. Jerome, M. R. Haberman, M. F. Hamilton. "Born approximation of acoustic radiation force used for acoustofluidic separation," *Proc. Mtgs. Acoust.* **48**, 045002 (2022)

Seminar talks

3. C. A. Gokani. "Acoustic Radiation Force: History, Theory, and Recent Advances," Texas Acoustics Seminar, Walker Department of Mechanical Engineering, UT Austin, to present on October 3rd, 2025.

2. C. A. Gokani. "Radiation forces due to progressive waves on a string and acoustic waves," Center for Nonlinear Dynamics, Physics Department, UT Austin, September 10th, 2025.

1. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Paraxial and ray approximations of acoustic vortex beams," Center for Nonlinear Dynamics, Physics Department, UT Austin, September 25th, 2024.

Conference talks

12. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Radiation force exerted by progressive waves on a string in terms of polarizability," *J. Acoust. Soc. Am.* **158**, A191 (2025). Invited to present at the 189th ASA, Honolulu, HI.

11. R. P. Williams, C. A. Gokani, M. F. Hamilton. "Measurement and analysis of second-harmonic generation in focused vortex beams," *J. Acoust. Soc. Am.* **158**, A378 (2025).

10. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Radiation force on inhomogeneous subwavelength scatterers due to progressive waves," *J. Acoust. Soc. Am.* **157**, A112–A113 (2025). Presented at the 188th ASA, New Orleans, LA.

9. C. A. Gokani, P. S. Wilson. "Timbral effects of the right-hand techniques of jazz guitarists Wes Montgomery and Joe Pass," *J. Acoust. Soc. Am.* **157**, A107 (2025). Invited to present at the 188th ASA, New Orleans, LA. See also: "Explaining the tone of two legendary jazz guitarists," a lay-language piece corresponding to this presentation, and a review by Michael Stocker.

8. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Analytical solutions for acoustic vortex beam radiation from planar and spherically focused circular pistons," *J. Acoust. Soc. Am.* **157**, A363 (2025). Presented at the 188th ASA, New Orleans, LA.

7. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Effects of increasing orbital number on the field transformation in focused vortex beams," *J. Acoust. Soc. Am.* **155**, A346 (2024). Presented at the 186th ASA, Ottawa, Canada. See also: "Using rays to describe spinning sound," a lay-language piece corresponding to this presentation.

6. C. A. Gokani, J. M. Cormack, M. F. Hamilton. "Growth rates of harmonics in nonlinear vortex beams," *J. Acoust. Soc. Am.* **154**, A328 (2023). Presented at the 185th ASA, Sydney, Australia.

5. C. A. Gokani, S. P. Wallen, M. R. Haberman. "Reciprocity, passivity, and causality in fully coupled acousto-electrodynamic media," *J. Acoust. Soc. Am.* **154**, A118 (2023). Presented at the 185th ASA, Sydney, Australia.

4. C. A. Gokani, S. P. Wallen, M. F. Hamilton, M. R. Haberman. "Source-driven homogenization theory for electro-momentum coupled scatterers," *J. Acoust. Soc. Am.* **153**, A120 (2023). Presented at the 184th ASA, Chicago, IL. Tied for first place in the ASA Structural Acoustics and Vibration Student Competition. Content from this talk was also presented at the 13th International Conference on Elastic, Electrical, Transport, and Optical Properties of Inhomogeneous Media, 2025.

3. S. P. Wallen, B. M. Goldsberry, C. A. Gokani, M. R. Haberman. "Computational analysis of sub-wavelength scatterers exhibiting electro-momentum coupling." *J. Acoust. Soc. Am.* **153**, A120 (2023).

2. C. A. Gokani, Y. Meng, M. R. Haberman, M. F. Hamilton. "Analytical solution for a focused vortex beam radiated by a Gaussian source," *J. Acoust. Soc. Am.* **152**, A56 (2022). Presented at the 183rd ASA, Nashville, TN.

1. C. A. Gokani, T. S. Jerome, M. R. Haberman, M. F. Hamilton. "Born approximation of acoustic radiation force used for acoustofluidic separation," *J. Acoust. Soc. Am.* **151**, A90 (2022). Presented

at the 182nd ASA, Denver, CO and the 22nd International Symposium on Nonlinear Acoustics, Oxford, UK.

Posters

2. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Acoustic radiation force on subwavelength objects due to progressive waves," presented at the Walker Department of Mechanical Engineering Research Poster Competition, February 21st, 2025 (tied for 1st place out of 30 posters). Also presented at the 188th ASA/25th ICA meeting in New Orleans on May 23rd, 2025 (tied for 2nd place out of 20 posters).

1. C. A. Gokani, M. R. Haberman, M. F. Hamilton. "Paraxial and ray approximations of acoustic vortex beams," presented at the Walker Department of Mechanical Engineering Research Poster Competition, March 18th, 2024 (3rd place out of 30 posters).

Technical Skills

- Theory: acoustics, electrodynamics, continuum and classical mechanics
- Computation: MATLAB, Mathematica
- Writing: LaTeX, HTML/CSS, Markdown, MS Office

Websites

- Wave Phenomena course notes: web-based class notes from ME 384N, taught by Prof. Mark F. Hamilton, 2024
- Acoustics PhD qualifying exam review site: website with everything I needed to know for my qualifying exam 2023
- IntelliChoice SAT Math Course: free math course for high school students studying for the SAT 2020

Affiliations

- Acoustical Society of America, Student Member 2021–present
- Texas Astronomical Society, Student Member 2018–2021

Volunteering

- Women in STEM, volunteer 2022–2025
- IntelliChoice, math tutor & branch manager 2018–2022
- Society of Physics Students at UTD, star party coordinator 2017–2021
- Helbing Jazz Initiative, jam session coordinator 2019–2020
- Richardson Public Library, volunteer 2017–2020

Extracurricular Activities

- Wind chimes: I have been handcrafting wind chimes since my sophomore year at UTD.
- Music: I have had a lifelong love for music.