



# BEHIND THE MUSIC

## Graduate students combining their love of music and the study of acoustics

On a piano bench at a department holiday party, two graduate students lean shoulder to shoulder, trading melodies as easily as conversation. One riffs a jazz phrase, the other echoes it back with a twist. For Lizette Wong and Chirag Gokani, moments like this are where science and art meet.

Both are graduate students in the Walker Department of Mechanical Engineering with a concentration in Acoustics, a field that studies the physics of sound and how it interacts with the world around us.

Wong's musical journey began as a child when she watched her sister take classical piano lessons and was inspired to do the same. When it was time to start college, she took on an ambitious double major in jazz piano and electrical engineering at UT Austin and was a member of the Jazz Combos in the Butler School of Music. After graduation, she found herself searching for a discipline that could unite both worlds.

"I wanted to do something in the middle — so I took the average of the two and went into Acoustics," said Wong.

As a first-year Ph.D. student, she studies the intersection of acoustic metamaterials and fluid flow. In collaboration with Johns Hopkins University, this project seeks to use these metamaterials to control noise and turbulent flow.

Gokani also got into music at an early age. He is self-taught on the piano and later picked up bass and guitar before going on to study Physics with a minor in Music at The University of Texas at Dallas. Today, as a fifth-year doctoral student preparing to defend his dissertation, Gokani focuses on topics in physical acoustics like understanding how sound waves interact with objects through scattering and diffraction.

The pair first connected through acoustics seminars. They describe the acoustics community on campus as a family, with faculty advisors Mark Hamilton, Preston Wilson and Michael Haberman be a guiding force.

"Grad school has this image of being stressful with no time for anything else," Gokani says. "But here it's been

the opposite. Our advisors actively support us having lives outside research."

At the time, both were enjoying their own musical pursuits, Wong with her jazz fusion band The Reading Club and Gokani as a solo artist. Once Gokani invited Wong to play with him at the Georgetown Art Center, a permanent duet was formed. Soon they were playing together around Austin and at faculty gatherings. The two see acoustics as a way of better appreciating music.

**"I think my love for music has grown through my academic studies.**

**Acoustics is a reminder of the beauty of nature and the fact that we're surrounded by waves of all types."**

- Chirag Gokani

Professor Hamilton reminds his students that 'a wave is a wave'. Meaning if you can understand acoustic waves, then you can also understand electromagnetic waves or quantum mechanical waves, even waves in the ocean. Studying acoustics can connect students to a range of topics like biomechanics, architecture and energy.

As Wong puts it, "Acoustics is everywhere — in nature, in buildings, in music, in people's lives. It's a science that connects everything."

Looking ahead, Gokani has been awarded the F.V. Hunt Postdoctoral Fellowship by the Acoustical Society of America and will head to the National Center for Physical Acoustics at the University of Mississippi post-graduation.

Wong is only just beginning her graduate research but envisions working in architectural acoustics or audio technology, getting to the root of the human experience of sound.

Neither sees music as something they'll leave behind as they pursue their careers. It remains for both of them a creative outlet and a reminder of why sound matters. ■