

WHAT CAN PHYSICISTS DO?

An interview series that profiles scientists who opted for careers outside of academia.

Alexandra Loubeau

studies how sonic booms affect people on the ground

By **Toni Feder**

Acoustics engineer, NASA

BM, music engineering technology, University of Miami, 1998

PhD, acoustics, Pennsylvania State University, 2006

What was your research focus?

As a graduate student, the acoustics work I did was related to understanding how noise travels through air. I looked at how nonlinear effects changed sound, especially at high frequencies. The point was to understand if loud noises were affecting the hearing of bats.

(Photo courtesy of NASA.)



What were you looking for in a job?

I wanted a research position but not necessarily a teaching position. I was open to what was out there. I got a postdoc in Paris, where I worked on sonic-boom prediction modeling. The postdoc research led to my position at NASA. I came here in 2008.

What do you do at NASA?

My project has changed over time, but it's all geared to understanding sonic booms. Early on, I studied the human response to sonic booms using simulators. Now I'm involved with X-59, an experimental airplane to demonstrate a quieter sound at supersonic speeds. [See *PT*'s 2024 article "NASA unveils a supersonic plane with a quiet boom."]

I'm involved in the predictions and measurements aspects and how to combine those with community survey results. The point is to see how people's reactions change as a function of some range of noise levels and to provide domestic and international regulators with data for developing a new sound standard for commercial supersonic travel over land.

How do you spend your time?

My day-to-day changes. For flight testing, I set up microphones and gather data, which I later analyze. I lead a team, and I'm a technical point of contact for our external partners. I also communicate NASA's research in papers and at conferences.

How do you use physics in your work?

Physics is important for understanding how sound travels from an airplane to the ground and how the atmosphere affects the sound.

What new skills did you need?

One technical skill that I needed to brush up on was statistics. I have also learned how to lead a team and how to create presentations for different audiences.

What do you like about your job?

I like working with people from across NASA and learning from partners—researchers and regulators—from around the world. It's exciting to be part of a project that will change how we all fly.

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