Luz Ángela García, a cosmology postdoc in Bogotá, Colombia, talks to Rob Lea about her journey into physics and astronomy as a woman from South America

Luz Ángela García is an astrophysicist who dreams of cracking the ultimate cosmological conundrum: why is the universe expanding at an accelerating rate? Currently a postdoctoral researcher at Universidad ECCI in Bogotá, Colombia, García has overcome many barriers to succeed in her field. Her motivation is her lifelong drive to understand the universe, which began in childhood with a quirky choice of bedroom decoration.

García grew up in Colombia’s capital city, Bogotá, more than 2500 m above sea level in the Andes. Bogotá’s connection to the stars is cruelly severed by air pollution, but as a young girl, García found another way to introduce the wonder of space to her daily life. “I built a little solar system on the wall of the bedroom I shared with my brothers when I was about eight years old with the light bulb as the Sun,” she recalls.

This interest in space was noticed by García’s family, who bought her a basic telescope, which she used to study objects like the Moon and Jupiter. Even then — before she had heard of dark energy or supernovae — curiosity about the vastness of the cosmos was brewing in the budding astronomer’s mind.

The vastness of space
Perhaps it is not surprising that her current research is so integrally concerned with the size of the universe; the idea of the unimaginable scale of space manifested early in García’s life, as did the concept of how tremendous cosmic distances affect what we see and how we see it. “My reproduction on the wall was not exactly to scale,” she laughs. “But still, I was puzzled by concepts like distances between the astronomical objects — mostly in our solar system — and even though I knew the Sun was a star, I wanted to know why it looks so different from other stars.”

“Remarkably, this led to part of my current research but at cosmological scales. I’m now actually using those distances to prove how dark energy is changing or shaping the way we see the universe.”

It wasn’t long before García’s teachers noticed their pupil’s burgeoning interest in the universe. When she was around 12 years old her biology teacher, Diana Pava, introduced the budding scientist to the work of Carl Sagan — through his magnum opus, the TV series Cosmos. By the age of 14, encouraged by her physics teacher Ernesto Campos, García was helping her fellow students understand scientific concepts such as thermodynamics and optics. “It was very cool indeed. Every time I tried to explain something, I was getting some additional insight,” García says. “I think that was very important in both my career as a lecturer and as someone doing science outreach. I was getting an insightful message for my future.”

From this point onwards Garcia set her mind on a career in the sciences, even if she wasn’t exactly sure which science it would be. Yet, the stars were not the only thing that was obscured from García’s view in these early years in Bogotá.

Discovering inequality
The positive attitudes of her family and educators had hidden from García the fact that women face additional obstacles to entering scientific fields. García had been no stranger to resistance, of course. She had frequently been encouraged to consider a more mundane career that didn’t require as much effort. But this new challenge was different, more than a mere irritation. When beginning her bachelor’s degree in physics at the Universidad Nacional de Colombia, the male-dominated lecture halls made her question the pursuit of a career in science entirely.

“During my degree, there were not many women studying with me — only about 20% of the people in my cohort — and just three female physics lecturers. That was the first indication to me that science was a male-dominated field.” García points out that these numbers dropped off still further as she progressed through academia. “That realization made me question if I was going to succeed in physics or astronomy.”