

Bridging worlds with science

Dr Archana Sharma On How To Connect Classrooms To The Cosmos

INTERVIEW

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Dr Archana Sharma is a senior physicist at CERN, Geneva, and a global advocate for STEM education and scientific innovation. With degrees in nuclear and particle physics from BHU, Delhi University, and the University of



Dr Archana Sharma, senior physicist, CERN

Geneva, she has been instrumental in the discovery of the Higgs boson as part of CERN's CMS experiment. From being a curious student in India to becoming a leader in global science, she sits to share her inspiring journey with GT.

Lighting the spark

My love for science began in the seventh grade. I still remember the moment my physics teacher praised me for answering a question about magnets. Back then, without internet and advanced technology, we could only play with cardboard boxes and tea packets to explore the world. But that recognition made me realise that I want my future to be just like hers!

Bridging the gap

When I left India 37 years ago to study abroad, I noticed a stark difference in the education systems back at home and away from it. In India, I was a top student, but abroad, I found myself lost. The system there was so hands-on. You touched, built, experimented, and then came to theory. So, the transition was tough. I did not speak the language, but I knew I had to make it through somehow. And so, I enrolled in a second PhD, where I focused entirely on hands-on instrumentation. It helped me bridge the theoretical knowledge from India with the practical expertise, an essential component needed in global labs.

Facing Gender Barriers

Women are smart and capable, and we work incredibly hard, but we also have to cope with a lot of societal expectations. I was almost denied the opportunity to work at CERN unless I agreed to get married. Despite these hurdles, I consider myself to be fortunate enough to have a strong family support. Still, even with a stellar academic record behind me, I often felt like an outsider. It took time to find my voice, but I eventually did.

Encouraging curiosity

Indian teachers are trying hard to improve STEM learning, but the system still pushes students to chase grades. We have systems which are not fully utilised, like the Atal Tinkering Labs. Imagine if each lab could build a table-sized detector to observe cosmic rays! Schools across India could collect data and connect it to the origins of the universe! Today, you can run simple experiments at home. Start science clubs, do small projects, and share your results. And most importantly, reach out to educators in India or abroad. Someone will surely reply.

Science & spirituality

The 'God Particle', or Higgs boson, is not about faith but evidence. As scientists, we believe what we can measure. The Higgs boson explains how other particles get their mass. Think of it this way — Why is an electron light and a proton heavy? That mystery is answered by the Higgs field. It's called the 'God Particle' because it behaves like it's granting mass to everything else.



Dr Archana with GT reporters

CERN's global impact

People often ask how CERN helps the world. My answer is simple: without CERN, there would be no 'www'. The World Wide Web was born from the need for global scientists to share data. Today, every click we make — from social media to finance — relies on that. CERN's research also contributes to medical technologies, space exploration, autonomous vehicles, and even the arts. This is why I am deeply committed to building bridges between Indian talent and global science.

Message for Amitians

Read widely. But most importantly, read about Indian scientists. Everyone knows Marie Curie but ask someone to name an Indian woman scientist and they would most often be unable to do so. That is why I wrote 'Noble Dreams of India' and later turned it into 'India's Science Geniuses'. These are the stories we need to celebrate; stories that are ours. Don't just dream — do. You have every right to be in the lab, at the front of discovery, changing the world. Dream it, and then do it. That is all it takes.

Book Review

Synopsis: This story is set in the gloomy town of Protectorate, which has orthodox and bizarre rules made by leaders known as the Elders. They enforce a cruel tradition; each year, the youngest child of the Protectorate must be abandoned in the forest to appease a witch they claim will otherwise destroy them. But this rule was a means to subdue people, and the Council of Elders didn't think there was a witch at all. In truth, she did exist: Xan, a kind hearted witch who rescued each child that was sacrificed. One year, she accidentally feeds moonlight to a baby girl called Luna, filling her with powerful magic. Xan raises Luna alongside a tiny, lovable dragon and a wise swamp monster. Meanwhile, Antain, a young man who once served the Elders, begins

A sip of moonlight

Book: The Girl Who Drank the Moon

Author: Kelly Barnhill

Published in: 2016

Genre: Fiction, Fantasy

questioning the terrible tradition and the authoritarianism in the innocent town. As Luna's powers grow, truth emerges and the lies that blind the Protectorate begin to unravel, challenging the Elders' dark magic.

Why it's worth reading: This story beautifully blends fantasy, emotion, and wisdom into a timeless tale. It follows the story of a misunderstood witch, a magical girl, and a town

shaped by fear and lies. Barnhill's lyrical prose creates an enchanting world while subtly exploring various themes like love, sacrifice, hope, and the power of truth. The characters are layered and relatable, appealing to both young and adult readers. It's a book that sparks imagination while leaving you with deeper reflections on kindness, courage, and the stories we choose to believe.

Iconic quote: "A story can tell the truth...but a story can also lie. Stories can bend and twist and obfuscate. Controlling stories is power indeed."

Rating: 5/5

Review by: Anika Tripathi

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