

Rhyme and Reason

Katrina Miller interviews a physicist who thinks in poetry from the cosmic edge

Much of the praise for Chanda Prescod-Weinstein's debut book in 2021, *The Disordered Cosmos: A Journey Into Dark Matter, Spacetime, and Dreams Deferred*, lauded the way she used personal experiences in physics to discuss the social and political inequities that exist alongside scientific breakthroughs.

"It contains the narrative of dreams deferred," Prescod-Weinstein, a physicist at the University of New Hampshire in the US, explained in April at a bookstore in Chicago, US. But its very existence, she said, also "represented a dream deferred, because that was not the dream of what my first book was going to be."

Her second book reclaims that dream. Released on April 7, *The Edge of Space-Time: Particles, Poetry, and the Cosmic Dream* Boogie is less pain and more play, a homage to the big questions that made Prescod-Weinstein want to become a physicist in the first place. Here are excerpts from the interview.

Q Why include so many references to poetry in a book about physics?

I knew poetry before I knew physics. It was part of my upbringing. I loved A.A. Milne's *Now We Are Six* and Edward Lear's *Nonsense Limericks*. Both of my books draw their subtitles from Langston Hughes' *Montage of a Dream Deferred*.

Adrienne Rich's poem *The Burning of Paper Instead of Children* became a guiding light for how my work would move in the world. It also opened up for me that I need language. That's true among physicists. Even an equation is a sentence; even an equation is telling a story... As physicists, we're always working in language to connect what we learn with what we know. Poetry is one of the first places that my brain goes to draw those links. What if we got away from the argument that doing cosmology and particle physics is practical or materially valuable? Then we have to accept that we're like the poets. What we do is important culturally in the same way poetry is. A piece of this book is me saying there is value in banding with the poets and fighting for the value of being curious, and trying to articulate the world with whatever tools are available to us. Not for the purposes of selling something, but for the purpose of fulfilling our humanity.

Q Another theme throughout the book is the story of Lewis Carroll's *Alice's Adventures in Wonderland*.

It has allowed me, as a Black queer person, to be open to the playful side that physics can take from you. I wanted the book to be whimsical because that's who I was when I first arrived in physics, and that's who I want to be when I die. Part of the call of quantum physics is to change what our sense and sensibility are. When you look at the world through this framework — like the idea that particles have spin but don't really spin — it sounds like nonsense. Except that's literally how the universe works. Physics is our "through the looking glass". It's real.

Q Your first chapter invites readers to reflect on the

metaphors used to describe the universe, like the "fabric" of space-time or electromagnetic "fields". Why open in this way?

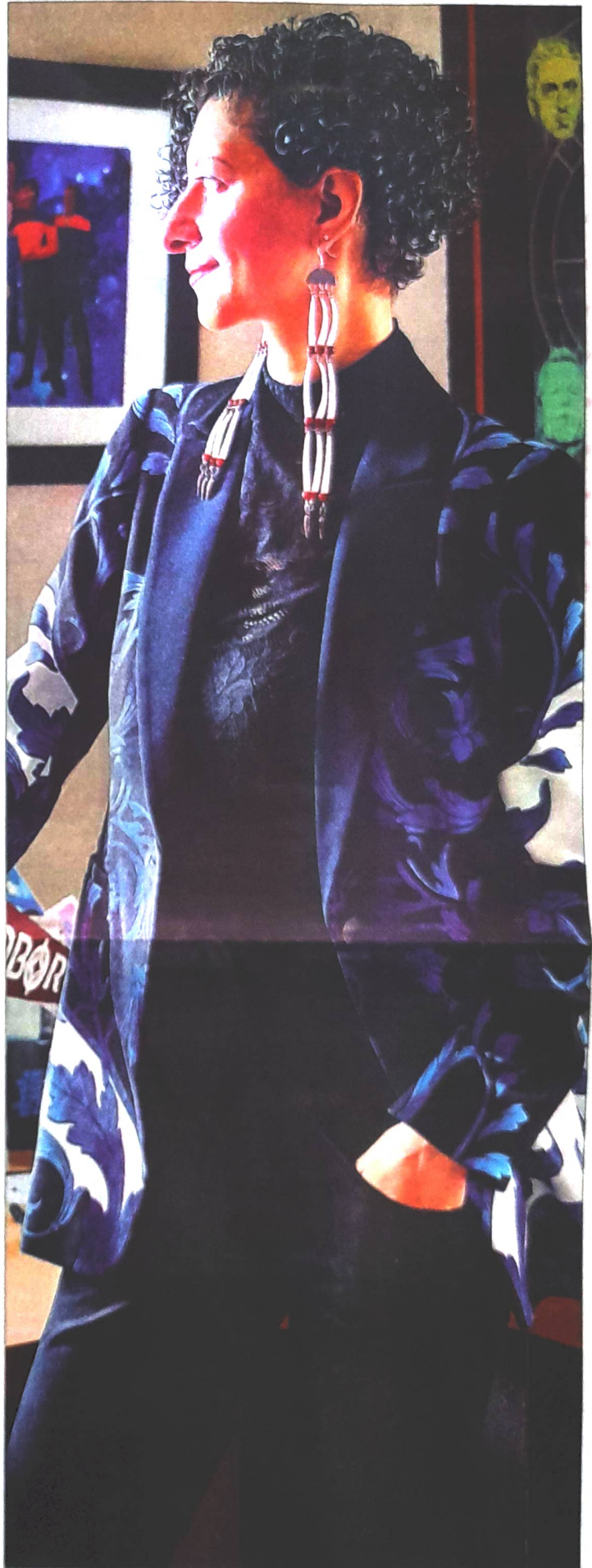
A lot of books about quantum physics start with its history. I wanted as much as possible to not do that. I had actually planned to start it with the Stern-Gerlach experiment of 1922. But then I read an essay by the poet Natasha Trethewey about abiding metaphors and started to ask myself what the abiding metaphors of my physics training were. We don't ever take time in our classes to ask, "What do we mean when we say 'space'? What do we mean when we say 'space-time'?" There are these metaphysical questions that I often told myself were for the philosophers. This book was me letting myself think of them as physics.

Q How do you want readers to approach this book?

There is this feeling that you're supposed to read a book like this and walk away an expert. That's actually not the point of this book at all. The point is to wander through physics. Even if maths terrifies you, you are entitled to spend some time with it. And so here, I have made you a book with a bunch of tidbits on the oddities of the universe. The universe is stranger and more queer and more wonderful and more full of possibility than whatever limitations you might be experiencing right now. Physics challenges what we are told are social norms. For example, non-trinary neutrinos are fundamental to our standard model of physics.

Q "Non-trinary," as in they shift between three different forms.

Non-trinary is natural. It's such a challenge to the current anti-trans rhetoric that says people can only ever be one thing. I don't need my book to be the most important thing that someone reads. But I want it to be a source of hope. If it reminds you that, as my mom says, the universe is bigger than the bad things that are happening to us, then that's all you need to remember. I'm good with that.



FUNDAMENTAL: Chanda Prescod-Weinstein, a cosmologist at the University of New Hampshire