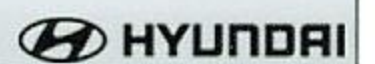




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Lisa Randall

By Julie Rawe

Lisa Randall's nonphysicist friends knew she was onto something big when she presented her work at a conference and Stephen Hawking saved her a seat at the banquet afterward. As the first female theoretical physicist to gain tenure at Harvard, Randall, 44, has not only been invited to sit with the boys but has also been leading the conversation because of her ideas about extra dimensions beyond the three that we can see and feel. She's not the first person to theorize that the universe has hidden dimensions, but she revolutionized the field by suggesting that an extra dimension could be infinitely large and that we might be living in a 3-D sinkhole in a higher-dimensional universe. Far from posing idle brain teasers, her research might solve one of physics' great mysteries—namely, why gravity is so weak in contrast to electromagnetism and other forces. (Note how a small magnet can pluck up a paper clip despite the gravitational pull of the entire planet.) After doing some mind-blowing math, she thinks the warped geometry of space-time could mean gravity is weak here and strong elsewhere.

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Lisa Randall

Randall is building on the notion that particles and forces could be confined in a membrane-like object called a brane. To help the public follow, she wrote a surprisingly hip book, *Warped Passages: Unraveling the Mysteries of the Universe's Hidden Dimensions*, that quotes Björk and Eminem and uses reader-friendly analogies like comparing a particle in our universe to a water droplet on a gravity-intensive shower curtain. But most important, Randall's work suggests ways to test for evidence of higher dimensions. Using Europe's Large Hadron Collider is one, and it should start cranking out useful data within a few years. Another tool that could back up her ideas is a trio of laser-interferometry spacecraft that NASA is helping put together. The project's acronym, LISA, is a nice bit of coincidence.

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