'Beam me up, Scotty:' ASU professor uses Star Trek themes to communicate science

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Before firing up the dilithium crystals in your warp drive, you should know what you are getting into, said Lawrence Krauss, ASU Foundation Professor at Arizona State University. When applied to the known laws of physics, some features of Star Trek – the endearing science fiction franchise that hooked millions of viewers on the possibility of intergalactic space travel – don't always hold up.

"For example, the transporter, is, alas, impossible, which is a real shame because I hate having to go through security at airports to get from one place to another," said Krauss at the American Association for the Advancement of Science annual meeting in Vancouver, Canada. Krauss made his presentation today, during a session on "Using Pop Culture to Slip Science into the Mainstream."

"A lot of people are interested in science, but they don't know they are interested in science, and this was a great way to get them started," Krauss said on using his bestselling book "The Physics of Star Trek" to engage lay audiences in advanced physics concepts. "I've used the fun of Star Trek to pique their interest in physics."

In addition to being a professor at ASU, Krauss is the director of the Origins Project, which explores key questions about our origins, who we are and where we came from.

In his presentation, Krauss examined some of the advanced technologies proposed in Star Trek and puts them in context to our current

understanding of physics. For example, considering the Enterprise's inertial dampers leads to a discussion of the forces of gravity and acceleration and then moves on to more complex ideas like time travel, warp drives and alternate universes. While examining Star Trek phenomena, Krauss explores the interrelationships of space and time and the physical laws that govern them at the micro and macro scales.

He does not rule out possibilities based on the current limitations to our knowledge, but speculates about the conditions necessary to bring about such technology in the future. For example, Krauss distinguished between Star Trek phenomena that are theoretically possible according to our current understanding of physics, like the existence of wormholes; those that appear to be theoretically possible, like warp drive; and those whose feasibility cannot yet be determined, like time travel.

While discussing our current state of knowledge in cosmology, and the limits of our knowledge, he summarized some of the arguments from his new book, "A Universe from Nothing: Why There is Something Rather than Nothing." Krauss states in the book that the current understanding of physics suggests that the Universe could have naturally evolved from nothing. The provocative book hit the New York Times Bestseller list for nonfiction in its first week after release and has remained on it.

"Everything we know about the Universe allows for it to come from nothing, and moreover all of the data are consistent with this possibility," Krauss said. "That this is even plausible is truly remarkable, and worth sharing."

Provided by Arizona State University

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