



# NOVA®

Produced for PBS by the  
WGBH Science Unit



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## BRIAN GREENE TAKES NOVA VIEWERS TO THE FRONTIERS OF PHYSICS IN A MIND-BENDING NEW FOUR-HOUR SPECIAL THAT CHALLENGES OUR VIEW OF THE UNIVERSE AND OUR NOTION OF REALITY

### *THE FABRIC OF THE COSMOS*

SPACE, TIME, QUANTUM, MULTIVERSE

Premieres Wednesdays, November 2-23, 2011 at 9PM ET/PT

[www.pbs.org/nova/fabric](http://www.pbs.org/nova/fabric)

Acclaimed physicist and host Brian Greene lets NOVA viewers in on a secret: We've all been deceived. Our perceptions of time and space have led us astray. Much of what we thought we knew about our universe—that the past has already happened and the future is yet to be, that space is just an empty void, that our universe is the only universe that exists—just might be wrong.

In *The Fabric of the Cosmos*, a new four-hour NOVA special series, Greene takes viewers on a mind-bending reality check and journey to the frontiers of physics to see how scientists are piecing together the most complete picture yet of space, time and the universe. With each step, audiences will discover that just beneath the surface of our everyday experience lies a world we'd hardly recognize—a startling world far stranger and more wondrous than anyone expected.

*The Fabric of the Cosmos* premieres on four consecutive Wednesday nights in November 2011 at 9pm ET/PT on PBS: “*What is Space?*” (11/2); “*The Illusion of Time*” (11/9); “*Quantum Leap*” (11/16); and “*Universe or Multiverse?*” (11/23).

“Our viewers love ideas—the bigger the better. And, in our new series, *The Fabric of the Cosmos*, we’ll give them a feast of ideas to ponder,” says NOVA Senior Executive Producer Paula Apsell. “We will look at why empty space is actually quite full, what time really is, why other universes may exist, and how a hidden world lies beneath this one, governed by rules radically different from our own. In a series of imagined environments, we’ll take our viewers to places they’ve never been, to see things that are literally out of this world.”

Based on Greene’s best-selling book *The Fabric of the Cosmos*, the new NOVA series promises to be the most visually compelling and entertaining presentation of modern physics ever seen on television—interweaving provocative theories, experiments, and stories with crystal-clear explanations and imaginative metaphors, as well as state-of-the-art computer graphics.

“The NOVA series is a journey that challenges audiences on things they take for granted and is an exciting opportunity to change that mindset in startling ways,” said Brian Greene. “It will convince people that everyday perception is a thoroughly, completely, profoundly misleading guide to the true nature of what is actually out there.”

### **WHAT IS SPACE? (Premieres Wed., Nov. 2, 2011 at 9pm ET/PT)**

Space. It separates you from me, one galaxy from the next, and atoms from each other. It is everywhere in the universe. But to most of us, space is nothing, an empty void. Well, it turns out space is not what it seems. From the passenger seat of a New York cab driving near the speed of light to a pool hall where billiard tables do fantastical things, Brian Greene reveals space as a dynamic fabric that can stretch, twist, warp, and ripple under the influence of gravity. Stranger still is a newly discovered ingredient of space that actually makes up 70% of the universe. Physicists call it dark energy because while they know it’s out there, driving space to expand ever more quickly, they have no idea what it is. Probing space on the smallest scales only makes the mysteries multiply down there, things are going on that physicists today can barely fathom. To top it off, some of the strangest places in space, black holes, have led scientists to propose that like the hologram on your credit card, space may just be a projection of a deeper two-dimensional reality, taking place on a distant surface that surrounds us. Space, far from being empty, is filled with some of the deepest mysteries of our times.

### **THE ILLUSION OF TIME (Premieres Wed., Nov. 9, 2011 at 9pm ET/PT)**

Time. We waste it, save it, kill it, make it. The world runs on it. Yet, ask physicists what time actually is, and the answer might shock you: They have no idea. Even more surprising, the deep sense we have of time passing from present to past may be nothing more than an illusion. How can our understanding of something so familiar be so wrong? In search of answers, Brian Greene takes us on the ultimate time traveling adventure, hurtling 50 years into the future before stepping into a wormhole to travel back to the past. Along the way, he will reveal a new way of thinking about time in which moments past, present, and future—from the reign of T.Rex to the birth of your great-great-grandchildren—exist all at once. This journey will bring us all the way back to the Big Bang, where physicists think the ultimate secrets of time may be hidden. You’ll never look at your wristwatch the same way again.

### **QUANTUM LEAP (Premieres Wed., Nov. 16, 2011 at 9pm ET/PT)**

Join Brian Greene on a wild ride into the weird realm of quantum physics, which governs the universe on the tiniest of scales. Greene brings quantum mechanics to life in a nightclub like no other, where objects pop in and out of existence and things over here can affect others over there, instantaneously—without anything crossing the space between them. A century ago, during the initial shots in the quantum revolution, the best minds of a generation—including Albert Einstein and Niels Bohr—squared off in a battle for the soul of physics. How could the rules of the quantum world, which work so well to describe the behavior of individual atoms and their components, appear so dramatically different from the everyday rules that govern people, planets, and galaxies? Quantum mechanics may be counterintuitive, but it’s one of the most

successful theories in the history of science, making predictions that have been confirmed to better than one part in a billion, while also launching the technological advances at the heart of modern life, like computers and cell phones. But even today, even with such profound successes, the debate still rages over what quantum mechanics implies for the true nature of reality.

**UNIVERSE OR MULTIVERSE? (Premieres Wed., Nov. 23, 2011 at 9pm ET/PT)**

Hard as it is to swallow, cutting-edge theories are suggesting that our universe may not be the only universe. Instead, it may be just one of an infinite number of worlds that make up the multiverse. Brian Greene takes us on a tour of this brave new theory at the frontier of physics, explaining why scientists believe it's true and showing what some of these alternate realities might be like. Some universes may be almost indistinguishable from our own; others may contain variations of all of us, where we exist but with different families, careers and life stories. In still others, reality may be so radically different from ours as to be unrecognizable. Brian Greene reveals why this radical new picture of the cosmos is getting serious attention from scientists. It won't be easy to prove, but if it's right, our understanding of space, time and our place in the universe will never be the same.


Now in its 39th season, NOVA is the most-watched primetime science series on American television, reaching an average of five million viewers weekly. The series remains committed to producing in-depth science programming in the form of hour-long (and occasionally longer) documentaries, from the latest breakthroughs in technology to the deepest mysteries of the natural world. NOVA airs Wednesdays at 9pm ET/PT on WGBH Boston and most PBS stations. The Director of the WGBH Science Unit and Senior Executive Producer of NOVA is Paula S. Apsell.

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*The Fabric of the Cosmos* will be available on Blu-ray and DVD through PBS Distribution on November 15, 2011 at [ShopPBS.org](http://ShopPBS.org), 800-531-4727.

More information about NOVA is available at [pbs.org/nova](http://pbs.org/nova) or by following NOVA on Facebook and Twitter.

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