

[PDF] God's Equation: Einstein, Relativity, And The Expanding Universe

Amir D. Aczel - pdf download free book

Books Details:

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Author: Amir D. Aczel

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Description:

Who would have thought a mathematical constant would make such an engaging character? *God's Equation: Einstein, Relativity, and the Expanding Universe*, mathematician Amir Aczel's tale of the search for a scientific explanation of the universe, features the cosmological constant in a role as complex as Einstein's. The great genius referred to it as his "greatest blunder," but recent events in the world of astrophysics have brought the prodigal term back into the fold as an important part of his field equation. Aczel is a powerful storyteller, and makes no secret of his admiration for Einstein; much of the book revolves around his conquest of general relativity. Integrating relativity with gravitation was no easy task (even for Einstein), but the author deftly steers the reader away from the sticky stuff and focuses attention on concepts of importance.

Aczel shows Einstein's aesthetic troubles with the cosmological constant, which preceded theoretical and experimental problems leading to its abandonment. The universe was caught in the act of expansion by Edwin Hubble, and the constant, originally invoked to maintain a steady-state universe, was unnecessary. Fortunately, though, the mathematics underlying the constant had become important tools for physicists; observations in 1997 and 1998 by Saul Perlmutter, Neta Bahcall, and others showed that the universe will continue expanding indefinitely and sent theorists back to the drawing board to revise their equations. The cosmological constant returned triumphant, and while its inventor might never have approved of it, today's scientific community gives it an honored role in *God's Equation*. --Rob Lightner --This text refers to an out of print or unavailable edition of this title.

From Publishers Weekly For decades, scientists have debated whether the universe will eventually collapse upon itself, will expand until it reaches an optimal size and remain steady, or will expand forever. To most everyone's surprise, studies of particular huge supernovae are providing evidence that the last possibility may be right and that billions of years from now the universe will be an unimaginably immense void of burned-out stars. The explanation for this may lie in the "cosmological constant," a part of Einstein's field equation for general relativity. Though Einstein described the constant as the greatest blunder of his career, many scientists now think that it could correctly represent some kind of "funny energy" pushing the universe apart. Aczel (*Fermat's Last Theorem*; *Probability 1*) contends that Einstein's equation for the cosmological constant is our best approximation of what he calls "God's equation": the ultimate summary of how the universe works. Though Aczel's analysis of Einstein's work requires familiarity with advanced mathematics, that analysis makes up only a minor portion of his book, and most readers will appreciate the author's inclusion of the great physicist's letters to astronomer Erwin Freundlich. Translated here for the first time, they give a glimpse of Einstein's ambition and of his occasional indifference toward collaborators who were no longer useful to him. Aczel's writing is marred by his proclivity to make hyperbolic statements ("Einstein became one of the greatest celebritiesApossibly the greatestAthe world has ever known"), and some of his historical observations are na?ve. Those fascinated by Einstein will find much of interest here, but general readers hungry for information about recent developments in cosmology may want to consult more accessible authors, such as John Gribbin (*The Case of the Missing Neutrinos*). Figures not seen by PW. (Oct.)
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