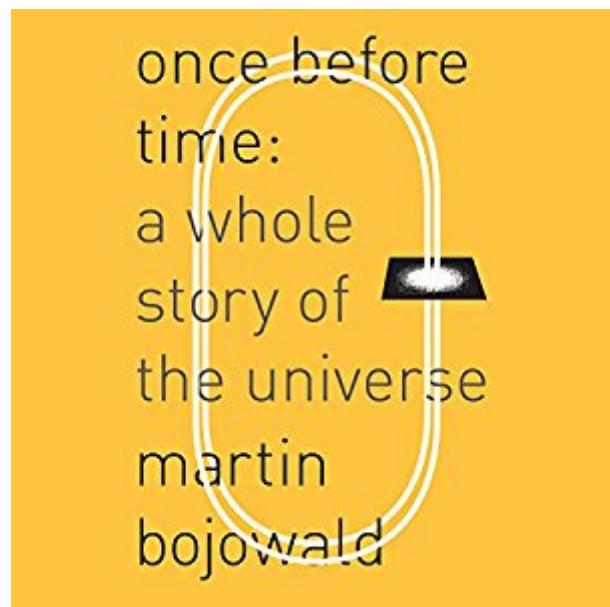


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# Once Before Time: A Whole Story Of The Universe



## **Synopsis**

In 2000, Martin Bojowald, then a 27-year-old postdoc at Pennsylvania State University, used a relatively new theory called loop quantum gravity - a combination of Einstein's theory of gravity and quantum mechanics - to create a simple model of the universe. Loop quantum cosmology, or LQC, was born, and with it, a theory that managed to do something even Einstein's theory of relativity had failed to do - illuminate the birth of the universe. According to LQC, our universe could have emerged from the collapse of a previous universe, a Big Bounce rather than a Big Bang. Now, Martin Bojowald explains the science behind this new model of the universe in a step-by-step argument for the logical and philosophical cogency of loop quantum gravity (with fascinating digressions into art, literature, and philosophy), and in the process takes us on a remarkable journey through the history of modern cosmology, back to the origin of the universe and to the time before it existed. In Martin Bojowald, we have not just an extraordinary and rigorous scientific mind, but also a science writer of uncommon eloquence and accessibility whose subject is as thoroughly fascinating as it is revolutionary.

## **Book Information**

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## **Customer Reviews**

Considering that there is scant little published material on LQC (aside from the deplorable book published by Books, LLC which is a collection of Wikipedia articles), I was highly excited by the author, quality and the size of the 'Once Before Time: A Whole Story of the Universe.' However, you do not judge a book by its cover--a lesson that is difficult for a self-professed bibliophile--and I have

to somewhat agree with the above reviewer in that I was somewhat left waiting for the punch line. That is to say, I understand that many popular level books have to start out by stating the same foundational issues many physics books seem pressured to lay out the same foundation only this book lays it out in such a way as to presume that one would have some working knowledge of classical and non-classical physics. This book accomplishes what it sets out to accomplish; namely, teaches you everything you wanted to know about LQC regardless of some outdated scientific notions (that are irrelevant anyway). Moreover, it is organized enough so that the "patient" reader can get through this book without too much pain. You will not find any chapter containing long descriptions of Einstein's light clock or the twin paradox. And, this is actually one of the good things one can state about the writing style and approach. Many of the chapters--at least at the beginning--are not tortuously long. That is why I would give this book a 3+ star rating. Contrary to the reviewer above, the book is worth more than 1-star and I would not dismiss the author too quickly as there is a measure of subjectivity when reading. Some chapters are three pages in length and very readable. That is to say, you do not lose touch with where the author is going--at least during the first half of the book.

This review was published in slightly shorter form in the Pittsburgh Post-Gazette, and I retained rights to republish it elsewhere. Move over, Stephen Hawking. Make way for Penn State physics professor Martin Bojowald! Bojowald's new book, *Once Before Time: A Whole Story of the Universe*, describes what may turn out to be a definitive breakthrough toward solving the greatest problem in modern physics. Though no one expects the professorial Bojowald to outsell the charismatic Stephen Hawking, *Once Before Time* is a more worthy successor to Hawking's 1980s mega-seller, *A Brief History of Time*, than is Hawking's own new book, *The Grand Design*. Bojowald's story begins in 2000 when he was a 27-year-old postdoctoral researcher in cosmology at Penn State. Understanding the behavior of the universe as a whole requires a solid grasp of two remarkably successful but apparently incompatible theories: general relativity and quantum mechanics. General relativity runs counter to our intuitive distinctions between space and time and between mass and energy. It describes gravity as the result of the warping of spacetime due to the distribution of mass-energy within it. Quantum mechanics describes the subatomic realm, again in counter-intuitive ways. Waves and particles become two faces of the same phenomenon, described mathematically as a wave function. The two theories, as currently constituted, are incompatible in a significant way.

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