

## **Physicist Stephen Hawking, who conquered the stars, dies at 76**

14/03/2018 07:13 by admin

Stephen Hawking suffered from amyotrophic lateral sclerosis (ALS), also known as Lou Gehrig's disease, and was confined to an electric wheelchair for much of his adult life.

### **Stephen Hawking**

Stephen Hawking, who sought to explain some of the most complicated questions of life while himself working under the shadow of a likely premature death, has died at 76.

He died peacefully at his home in the British university city of Cambridge in the early hours of Wednesday.

“We are deeply saddened that our beloved father passed away today,” his children Lucy, Robert and Tim said in a statement.

Hawking’s formidable mind probed the very limits of human understanding both in the vastness of space and in the bizarre sub-molecular world of quantum theory, which he said could predict what happens at the beginning and end of time.

His work ranged from the origins of the universe itself, through the tantalizing prospect of time travel to the mysteries of space’s all-consuming black holes.

“He was a great scientist and an extraordinary man whose work and legacy will live on for many years,” his family said. “His courage and persistence with his brilliance and humor inspired people across the world.”

The power of his intellect contrasted cruelly with the weakness of his body, ravaged by the wasting motor neurone disease he contracted at the age of 21.

Hawking was confined for most of his life to a wheelchair. As his condition worsened, he had to resort to speaking through a voice synthesizer and communicating by moving his eyebrows.

The disease spurred him to work harder but also contributed to the collapse of his two marriages, he wrote in a 2013 memoir “My Brief History.”

In the book he related how he was first diagnosed: “I felt it was very unfair - why should this happen to me,” he wrote.

“At the time, I thought my life was over and that I would never realize the potential I felt I had. But now, 50 years later, I can be quietly satisfied with my life.”

Hawking shot to international fame after the 1988 publication of “A Brief History of Time”, one of the most complex books ever to achieve mass appeal, which stayed on the Sunday Times best-sellers list for no fewer than 237 weeks.

He said he wrote the book to convey his own excitement over recent discoveries about the universe.

“My original aim was to write a book that would sell on airport bookstalls,” he told reporters at the time. “In

order to make sure it was understandable I tried the book out on my nurses. I think they understood most of it.â€•

He was particularly proud that the book contains only one mathematical equation - relativityâ€™s famous  $E=MC^2$  squared.

His popular recognition became such that he appeared as himself on the television show â€œStar Trek: Next Generationâ€• and his cartoon caricature appeared on â€œThe Simpsonsâ€•.

## **TWO CONCEPTS OF TIME**

Since 1974 he worked extensively on marrying the two cornerstones of modern physics - Einsteinâ€™s General Theory of Relativity, which concerns gravity and large-scale phenomena, and quantum theory, which covers subatomic particles.

As a result of that research, Hawking proposed a model of the universe based on two concepts of time: â€œreal timeâ€•, or time as human beings experience it, and â€œquantum theoryâ€™s â€œimaginary timeâ€•, on which the world may really run.

â€œImaginary time may sound like science fiction ... but it is a genuine scientific concept,â€• he wrote in a lecture paper.

Real time could be perceived as a horizontal line, he said.

â€œOn the left, one has the past, and on the right, the future. But thereâ€™s another kind of time in the vertical direction. This is called imaginary time, because it is not the kind of time we normally experience - but in a sense, it is just as real as what we call real time.â€•

In July 2002, Hawking said in a lecture that although his quest was to explain everything, a theory of determinism that would predict the universe in the past and forever in the future probably could not be achieved.

He caused some controversy among biologists when he said he saw computer viruses as a life form, and thus the human raceâ€™s first act of creation.

â€œI think it says something about human nature that the only form of life we have created so far is purely destructive,â€• he told a computer forum in Boston. â€œWeâ€™ve created life in our own image.â€•

He also predicted the development of a race of self-designing human beings, who will use genetic engineering to improve their make-up.

Another major area of his research was into black holes, the regions of space-time where gravity is so strong that nothing, not even light, can escape.

When asked whether God had a place in his work, Hawking once said: â€œâ€œIn a way, if we understand the universe, we are in the position of God.â€•

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## **Here's a look at Stephen Hawking's famous literary works:**

**A Brief History of Time** reviews the great theories of the cosmos from Newton to Einstein and delves into the secrets which still lie at the heart of space and time, from the Big Bang to black holes, via spiral galaxies and string theory. The book was on the British Sunday Times best-seller list for a 237 weeks.

**Black Holes and Baby Universes:** This is Stephen Hawking's first collection of essays and other pieces - on subjects that range from warmly personal to the wholly scientific.

**The Universe in a Nutshell** takes the reader into a dizzying new world of M-theory and branes and pushes the frontiers of popular physics beyond relativity and quantum theory.

**The Grand Design** is the book with the most recent scientific thinking about the mysteries of the universe.

**My Brief History:** The book recounts Stephen Hawking's improbable journey, from his post-war London boyhood to his years of international acclaim and celebrity.

Apart from this, Stephen Hawking has also written *On the Shoulders of Giants*, *God created the Integers*, *The Large Scale Structure of Spacetime*, with G F R Ellis, *General Relativity: An Einstein Centenary Survey*, with W Israel, and *300 Years of Gravitation*, with W Israel. In the *George* series, Stephen Hawking and his daughter Lucy Hawking wrote *George and the Blue Moon*, *George and the Unbreakable Code*, *George and the Big Bang*, *George's Cosmic Treasure Hunt* and *George's Secret Key to the Universe*. In his autobiography, Professor Hawking wrote, "You were supposed to be either brilliant without effort, or accept your limitations".

- Reuters & NDTV