

Eugene Parker (1927–2022)

Eugene Parker, the father of heliophysics, passed away on 15 March 2022. Through his discovery of the solar wind, Parker built the foundation for our understanding of the Sun and its influence on and beyond the Solar System.

Born in 1927 in Houghton, Michigan, Parker spent his formative years in Michigan and earned his BS in physics from Michigan State College in 1948. He went on to earn his PhD in physics from the California Institute of Technology in 1951 and served as an instructor in math and astronomy and assistant professor of physics at the University of Utah until 1955, when he joined the University of Chicago's Enrico Fermi Institute, where he would remain for the rest of his career.

In 1957, intrigued by the Sun and mysteries about the temperature of the corona, Parker solved the math that established the theory of the solar wind, which would become arguably his most famous discovery. He was 30 years old.

"It was so simple," Parker stated in a Chicago University interview in 2017. "Four lines of algebra."

The importance of Parker's theory of the solar wind cannot be overstated. It revolutionized our understanding of the Sun and its influence on and beyond the Solar System. Today, hundreds of scientists follow in Parker's footsteps studying the solar wind, which we now know fills our entire Universe and is a major factor driving space weather that can trigger geomagnetic storms that can directly impact planets — including Earth.

"The Sun is the primary puzzle in the Universe because it's the one star we can observe in detail and stars are complicated things," Parker said in the same interview. "We can't imagine all the strange things that have been discovered in the Sun."

Today we understand the magnitude and sheer genius of Parker's discovery but in the 1950s, his then-radical hypothesis was mocked. His concept was deemed utterly absurd and his theory dismissed as "ridiculous". However, as far as Parker was concerned, it "was open and shut". He would have to wait four years for science to catch up and validate his theory.

Parker's discovery of the solar wind was just one of his many achievements. During his lifetime he earned a multitude of distinguished awards and honours including the US National Medal of Science, the Kyoto Prize, the Crafoord Prize, the American Physical Society Medal for Exceptional Achievement in Research and the James Clerk Maxwell Prize.



Credit: UChicago

"I always looked upon myself as a physicist learning new tricks by looking at nature," Parker further mused. "Space, the whole galaxy, the whole Universe — I know no better place to find new physics."

Later in his life, Parker's discoveries and legacy were honoured by NASA, who chose to name a mission that would fly through the Sun's atmosphere after him. It marked the first time a NASA mission was named after a living person. Before launch, I had the honour of escorting Parker to the cleanroom at the Applied Physics Lab at Johns Hopkins University to show him the spacecraft. And of course, I announced with a flourish, "Parker, meet Parker".

On 12 August 2018 just before dawn, Parker watched in awe as his namesake mission Parker Solar Probe — the spacecraft built to perform the closest-ever observations of a star — began its journey to uncover the hidden mysteries of the Sun. To watch Parker watching Parker, please view [this clip](#) (1:21–1:40) from a tribute video produced by NASA's Goddard Space Flight Center.

"I am certainly greatly honoured to be associated with such a heroic scientific space mission," Parker said that day.

Since launch, Parker Solar Probe continued Parker's legacy by breaking records and exceeding expectations. And nearly 60 years after his initial "ridiculous"

discovery, Parker's namesake mission accomplished a feat no human-made object has ever done: it 'touched' the Sun.

"There's always a little anxiety about will something go wrong — and the answer is no," Parker declared. "This baby was built to perform, and it's done its job flawlessly."

"The field of heliophysics exists in large part because of Dr Eugene Parker," stated Thomas Zurbuchen, NASA's associate administrator for science in Washington. "Honouring his work by giving Parker Solar Probe his name is one of the proudest accomplishments of my career. My work, my passion for science, and my drive to keep exploring is strongly influenced by this great man. Parker Solar Probe 'touching the Sun' is a fitting accomplishment for his namesake mission."

The news of Parker's passing hit close to the hearts of many at NASA who had worked with Parker or were influenced by his visionary discoveries.

"We were saddened to learn the news that one of the great scientific minds and leaders of our time has passed," said NASA Administrator Bill Nelson. "Dr Eugene Parker's contributions to science and to understanding how our Universe works touches so much of what we do here at NASA. Dr Parker's legacy will live on through the many active and future NASA missions that build upon his work."

Anyone who knew Parker knew that he was visionary. I was honoured to stand with him at the launch of Parker Solar Probe and have loved getting to share with him all the exciting science results, seeing his face light up with every new image and data plot I showed him. I will sincerely miss his excitement and love for Parker Solar Probe. Like a loving dad does with his children, Parker, the father of heliophysics, hoisted humanity onto his shoulders and allowed us to touch the Sun. Even though he is no longer with us, his legacy will live forever. □

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Published online: 17 May 2022
<https://doi.org/10.1038/s41550-022-01686-z>