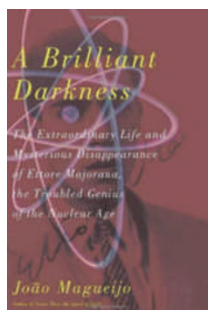


# Lost in a sea of asides



**A Brilliant Darkness: The Extraordinary Life and Mysterious Disappearance of Ettore Majorana, the Troubled Genius of the Nuclear Age**

By João Magueijo

BASIC BOOKS: 2009.  
320PP. \$27.50

What do we know about Ettore Majorana? He was born in Sicily in 1906, started a degree in engineering at the University of Rome but later changed to physics, joined Enrico Fermi's famous Physics Institute on the Via Panisperna, retreated to his bedroom between 1933 and 1937, was awarded a professorship in Naples in late 1937, and was last seen on 26 March 1938 on a ship travelling from Naples to Palermo, Sicily. He published just nine papers, all theoretical, but several of them have proved to be remarkably influential, and their influence continues to increase with time.

And what do we know about João Magueijo, author of *A Brilliant Darkness*? Born in Portugal in 1967, he is now a professor of theoretical physics at Imperial College in London, and his first book, *Faster than the Speed of Light*, was a highly readable and entertaining account of his work on a theory in which the speed of light has changed over the history of the Universe. However, it was let down in places by a tone that was described by the *New York Times* as puerile. Sadly, as we shall see, *A Brilliant Darkness* is less readable and more juvenile than its predecessor.

The Majoranas were a family of high achievers: Ettore's grandfather, Salvatore, was a physics professor turned politician who rose to become a government minister and senator; his father was a successful businessman; and three of his uncles became rectors of the university in their home town of Catania. Majorana's colleagues at the Via Panisperna (which Magueijo, for some reason, feels obliged to point out sounds similar to the Italian words for bread and sperm) were equally high achievers. Two of them — Fermi and Emilio Segrè — went on to win the Nobel Prize, and Eduardo Amaldi was one of the founding fathers of the CERN particle physics laboratory. It is fair to say that Majorana did not get on particularly well

with many of his colleagues in Rome, and vice versa, but that hardly seems to justify the vitriol that Magueijo reserves for Fermi and Segrè in particular.

When Majorana joined the institute the focus was on atomic physics, but it soon shifted to nuclear physics as the neutron was discovered. Majorana was one of the first physicists to realize that a 'neutral proton' could explain the experimental data of the time, but in a sign of things to come, he did not write up this work. Majorana's reluctance to publish infuriated Fermi, who had been scooped to the discovery of the exclusion principle by Wolfgang Pauli, and thereafter insisted on publishing results and theories as soon as possible.

Nonetheless, by the end of 1932 Majorana had published enough papers to have the world of theoretical physics at his feet, and in January 1933, with a generous grant in his pocket, he headed off to work with Werner Heisenberg in Leipzig, where he did important work on the strong force, and then on to Copenhagen to work with Niels Bohr. However, things started to go wrong and by the end of the year Majorana had withdrawn to his bedroom in Rome, where he was to stay for the next four years. The rise of fascism in Europe, the death of his father, gastritis and the discovery of the positron may all have contributed.

Holed up in his room he continued to work on theoretical physics, and also on medicine, game theory and sociology, while his friends occasionally sent in a barber to keep his hair and beard under control. Then, in 1937, and somewhat surprisingly, Majorana entered a *concorso* — a competition to fill a number of university positions — and was appointed to a chair in theoretical physics in Naples.

As part of his application he submitted the paper for which he is best known today — the idea that the neutrino is its own

antiparticle. This work built on a 1932 paper in which Majorana proposed a modification of Paul Dirac's relativistic wave equation for electrons. According to Dirac, neutrinos and antineutrinos are different, and today it is still not known if the neutrino is a Majorana particle or a Dirac particle, although experiments on double beta decay may soon be able to answer this question. Meanwhile, condensed-matter physicists are searching for evidence of other types of Majorana particle in superconducting systems (see, for instance, F. Wilczek *Nature Phys.* 5, 614–616; 2009).

In January 1938, Majorana started work in Naples and was last seen at the university on the morning of Friday 25 March, after which the details become hazy. It is not known for sure if he ever arrived in Sicily, let alone caught the ship back to Naples. Theories about what happened to him abound — he committed suicide, he joined a monastery, he moved to Argentina ...

How much more do we need to know about Ettore Majorana? On the evidence of *A Brilliant Darkness*, there is not a book's worth to know (although dozens of books about Majorana have already been published in Italian). Indeed, this biography reads more like a proposal for a TV programme that would involve its author travelling the length and breadth of Italy, drinking lots of red wine, and interviewing Majorana's relatives and surviving acquaintances in his 'risible parody' of Italian. One would only hope that the editor of this hypothetical programme would delete the constant stream of pointless and scatological asides that become more irritating with each passing page, thus saving its author from himself in a way that its subject was unable to do. □

REVIEWED BY PETER RODGERS

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ON OUR BOOKSHELF



**The Science of the Oven**

By Hervé This

COLUMBIA UNIV. PRESS: 2009. 216 PP. \$22.95 / £15.95

From the man who first suggested using ultrasonic sound tanks and rotary evaporators in the kitchen — and who proclaims "Down with disciplinary boundaries!" (when it comes to cooking) — comes a new book on the physics and chemistry of food, from the molecular level to the phase transitions to the final sensorial properties that we experience.