



Ten books for ten years of Higgs

In July 2012, the discovery of a particle “compatible with the Higgs boson” was announced at CERN. To mark the anniversary, here are ten books — in no particular order — about the physics, the discovery, the people and the technology that made it possible.

Sean Carroll’s *The Particle at the End of the Universe: The Hunt for the Higgs and the Discovery of a New World* (Oneworld Publications, 2012). Winner of the 2013 Royal Society Winton Prize for Science Books, this book conveys not just the physics of the Higgs discovery, but also the human side — the excitement, the risks, and the “money, politics and jealousy”. The tale is told with a physicist’s care for details and a storyteller’s flair.

Lisa Randall’s *Higgs Discovery: The Power of Empty Space* (Bodley Head, 2012). Published just weeks after the announcement of the Higgs discovery, this short, sweet book tells the story of professor of particle physics and cosmology Lisa Randall’s personal excitement of tuning into the webcast from a Greek cafe, while providing a primer on the science behind the Higgs and the significance of the discovery.

Jon Butterworth’s *Smashing Physics: Inside the World’s Biggest Experiment* (Headline, 2015). As physicist Jon Butterworth writes, this is not a physics textbook, a history book, a diary, or a manifesto for science communication. Rather, this book conversationally weaves in all of these aspects to tell the story of the Higgs discovery from the point of view of a particle physicist who has been working at the Large Hadron Collider (LHC) since 2001.

Ian Sample’s *Massive: The Missing Particle That Sparked the Greatest Hunt in Science* (Basic Books, 2012). Predating the Higgs announcement, this book tells the story of the LHC, and the colliders that came before it. It covers the sociology and politics driving these large facilities, as well as sketching out a (sometimes simplified) history of science of the physics theories motivating these experiments.

Jim Baggott’s *Higgs: The Invention and Discovery of the ‘God Particle’* (Oxford University Press, 2013). In a series of whimsically subtitled chapters (“In which Chen Ning Yang and Robert Mills try to develop a quantum field theory of the strong nuclear force and annoy Wolfgang Pauli”), science writer Jim Baggott takes readers on a whistle-stop tour through the development of the idea of a Higgs field and how the experiment to test it came to be.

James Gillies’s *CERN and the Higgs Boson: The Global Quest for the Building Blocks of Reality* (Icon Books, 2018). As a former CERN research scientist, then head

of its communications group at the time of the Higgs announcement, James Gillies is well-positioned to tell the story of the Higgs discovery and describe its place as a part of the history of CERN. In this book, he brings out the shift from the lone genius model of science to science as a large-scale endeavour in which big projects are essential.

Claudia Marcelloni and Colin Barras’s *Hunting the Higgs: The Inside Story of the ATLAS Experiment at the LHC* (Papadakis, 2013). The ATLAS detector is certainly photogenic. *Hunting the Higgs* takes full advantage, weaving an introduction to how the experiment works around stunning large-format photos. You may end up wishing your lab looked like this.

Letizia Diamante’s *Your Adventures at CERN: Play the Hero Among Particles and a Particular Dinosaur!* (World Scientific Publishing, 2021). Whereas most books about CERN convey the excitement of particle physics with anecdotes about scientists camping out overnight to get a seat at the Higgs announcement, *Your Adventures at CERN* uses cartoon illustrations, puzzles, recipes and a cat named Schrödy. Science writer Letizia Diamante hopes her gamebook will “inspire young readers to be intellectually intrepid”.

Frank Close’s *Elusive: How Peter Higgs Solved the Mystery of Mass* (Basic Books, 2022). Peter Higgs is a man who is as elusive as the particle named after him — he is contactable only by landline or post, and all but disappeared from public life after winning the Nobel Prize. In this biography, physicist and writer Frank Close tells the story of his colleague’s life and his discovery. By weaving in physics explanations with personal anecdotes, the result is the biography of both the person and the particle.

Anton Radevsky and Emma Sanders’s *The LHC Pop-up Book: Voyage to the Heart of the Matter* (Papadakis, 2013). The biggest drawback of the other books listed here is that their pages are, sadly, confined to two dimensions. *The LHC Pop-up Book* breaks free of these confines with a series of intricate and detail-oriented pop-ups about the LHC, and the ATLAS experiment in particular. This book is possibly the most enchanting — and fun — introduction to experimental particle physics for older children and adults.