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## El Boson De Higgs Que Sabemos De

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*CERN and the Higgs Boson* Roma TrE-Press

This book provides a general description of the search for and discovery of the Higgs boson (particle) at CERN's Large Hadron Collider. The goal is to provide a relatively brief overview of the issues, instruments and techniques relevant for this search; written by a physicist who was directly involved. The Higgs boson mat be the one particle that was studied the most before its discovery and the story

from postulation in 1964 to detection in 2012 is a fascinating one. The story is told here while detailing the fundamentals of particle physics. The Standard Theory of Particle Physics Yale University Press Details the history of the Large Hadron Collider and the scientific breakthroughs it helped to discover, including the Higgs boson. Particles, Fields, Space-Time Springer Nature We show that the mathematical proof of the four color theorem yields a perfect interpretation of the Standard Model of particle physics. The steps of the proof enable us to construct the t-Riemann surface and particle frame which forms the gauge. We specify well-defined rules to match the Standard Model in a one-to-one correspondence with the topological and algebraic structure of the particle frame. This correspondence is exact - it only allows the particles and force fields to have the observable properties of

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the Standard Model, giving us a Grand Unified Theory. In this paper, we concentrate on explicitly specifying the quarks, gauge vector bosons, the Standard Model scalar Higgs boson and the weak force field. Using all the specifications of our mathematical model, we show how to calculate the values of the Weinberg and Cabibbo angles on the particle frame. Finally, we present our prediction of the Higgs boson mass  $M = 126 \text{ GeV}$ , as a direct consequence of the proof of the four color theorem.

The Higgs Boson Nova Publishers

This thesis presents the measurement of the Higgs boson cross section in the diphoton decay channel. The measurement relies on proton-proton collision data at a center-of-mass energy  $\sqrt{s} = 13 \text{ TeV}$  recorded by the ATLAS experiment at the Large Hadron Collider (LHC). The collected data correspond to the full Run-2 dataset with an integrated luminosity of  $139 \text{ fb}^{-1}$ . The measured cross sections are used to constrain anomalous Higgs boson interactions in the Effective Field Theory (EFT) framework. The results presented in this thesis represent a reduction by a factor 2 of the different photon and jet energy scale and resolution systematic uncertainties with respect to the previous ATLAS publication. The thesis details the calibration of electron and photon energies in ATLAS, in particular the measurement of the presampler energy scale and the estimation of its systematic uncertainty. This calibration was used to perform a measurement of the Higgs boson mass in the  $H \rightarrow \gamma\gamma$  and  $H \rightarrow b\bar{b}$  channels using the  $36 \text{ fb}^{-1}$  dataset.

**Search for Dark Matter Produced in Association with a Higgs Boson Decaying to Two Bottom Quarks at ATLAS** Oxford University Press

Viajes en el tiempo, agujeros negros, motores de antimateria, aceleración del universo... La física moderna suena a película, pero es ciencia, de la de verdad verdadera, la que nos cuenta una historia fascinante de descubrimientos y sueños cumplidos, de luchas y disputas, de pasión por comprender la naturaleza. Este divertido libro te ayudará a entender de una vez por todas lo que nos rodea, desde lo más pequeño a lo más grande, y a saber que el bosón de Higgs no te va a hacer la cama, ¡ni aunque le insistas! Edición actualizada, con un capítulo nuevo sobre el CERN.

**The Particle at the End of the Universe** World Scientific

As accessible as it is fascinating, The Large Hadron Collider reveals the inner workings of this masterful achievement of technology, along with the mind-blowing discoveries that will keep it at the center of the scientific frontier for the foreseeable future.

The God Particle Debate Editorial

This book describes the searches that lead to the discovery of a Higgs boson performed at CMS, one of the two main experiments at the CERN LHC. After an overview of the theory and of the CMS experiment, all search channels are described, with emphasis on the ones with the best sensitivity. The statistical methodology used to analyse and the outcomes of the searches and the discovery results are then presented in detail.

**Discovery of the Higgs Boson** Springer Nature

This thesis reports on the search for dark matter in data taken with the ATLAS detector at CERN's Large Hadron Collider (LHC). The identification of dark matter and the determination of its properties are among the highest priorities in elementary particle physics and

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cosmology. The most likely candidate, a weakly interacting massive particle, could be produced in the high energy proton-proton collisions at the LHC. The analysis presented here is unique in looking for dark matter produced together with a Higgs boson that decays into its dominant decay mode, a pair of b quarks. If dark matter were seen in this mode, we would learn directly about the production mechanism because of the presence of the Higgs boson. This thesis develops the search technique and presents the most stringent production limit to date.

[Search for the Higgs Boson Produced in Association with Top Quarks with the CMS Detector at the LHC](#) Scientific American

The book gives a quite complete and up-to-date picture of the Standard Theory with an historical perspective, with a collection of articles written by some of the protagonists of present particle physics. The theoretical developments are described together with the most up-to-date experimental tests, including the discovery of the Higgs Boson and the measurement of its mass as well as the most precise measurements of the top mass, giving the reader a complete description of our present understanding of particle physics.

[El bosón de Higgs no te va a hacer la cama](#) Icon Books

Provides a broad look at the history of CERN, and the physicists working in different areas at CERN who were active in the discovery of the Higgs Boson. Combines present day interviews with the scientists of CERN, the world's largest laboratory dedicated to the pursuit of fundamental science, with important figures in the history of science (e.g., Maxwell, Faraday, Einstein), and provides information on the history of quantum mechanics and the history of physics from its beginnings. An easy-to-read book on a complex topic, provides an insight into the personalities of top scientists and the history of science as well. --Publisher information.

**Search for the Higgs Boson in the Vector Boson Fusion Channel at the ATLAS Detector** Birkhäuser

The Higgs boson is the rock star of fundamental particles, catapulting CERN, the laboratory where it was found, into the global spotlight. But what is it, why does it matter, and what exactly is CERN? In the late 1940s, a handful of visionaries were working to steer Europe towards a more peaceful future through science, and CERN, the European particle physics laboratory, was duly born. James Gillies tells the gripping story of particle physics, from the original atomists of ancient Greece, through the people who made the crucial breakthroughs, to CERN itself, one of the most ambitious scientific undertakings of our time, and its eventual confirmation of the Higgs boson. Weaving together the scientific and political stories of CERN's development, the book reveals how particle physics has evolved from being the realm of solitary genius to a global field of human endeavour, with CERN's Large Hadron Collider as its frontier research tool.

[Beyond the God Particle](#) World Scientific Publishing Company

The book aims to explain the historical development of particle physics, with special emphasis on CERN and collider physics. It describes in detail the LHC accelerator and its detectors, describing the science involved as well as the sociology of big collaborations, culminating with the discovery of the Higgs boson. Readers are led step-by-step to understanding why we do particle physics, as well as the tools and problems involved in the field. It provides an insider's view on the experiments at the Large Hadron Collider.

**The Large Hadron Collider** Océano

The history of particle physics, the hunt for the most elusive particle, and the fundamental questions the search has

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inspired How did physicists combine talent and technology to discover the Higgs boson, the last piece in our inventory of the subatomic world? How did the Higgs change our understanding of the universe? And now, nearly a decade after its detection, what comes next? Answering these questions, Ivo van Vulpen—a CERN particle physicist and member of the team behind the detection—invites us on a journey to the frontiers of our knowledge. Enjoy van Vulpen's accessible explanation of the history of particle physics and of concepts like quantum mechanics and relativity—and ponder his inquiries regarding the search for new particles (to explain dark matter), a new force (to combine the existing fundamental forces), and new phenomena (undiscovered dimensions of space). This is a lively account of work at the world's highest-energy particle accelerator, with inspiring personal reflections on humanity's discoveries deeper and deeper into the world of the very small.

[How to Find a Higgs Boson—and Other Big Mysteries in the World of the Very Small](#) Springer

In the early 1960s, three groups of physicists, working independently in different countries, stumbled upon an idea that would change physics and fuel the imagination of scientists for decades. That idea was the Higgs boson – to find it would be to finally understand the origins of mass – the last building block of life itself. Now, almost 50 years later, that particle has finally been discovered. Award-winning science writer Ian Sample weaves together the personal stories and intense rivalries of the teams of scientists behind the Higgs boson. Massive is a tale of

grand ambition, trans-Atlantic competition, clashing egos and occasionally spectacular failures. From the giant particle colliders built to further the scientists' quest to the political fallout of budget blowouts, debates over whether the search might even destroy the universe, to the incredible discovery of the particle itself, this is an epic story of imagination, personal ambition, sub-atomic exploration and global significance. Whichever way you look at it, this story is massive.

[Inside Cern's Large Hadron Collider: From The Proton To The Higgs Boson](#) Oxford University Press

Explains the science behind the discover of the Higgs particle, also known as the God particle, and its implications for the future of science. 20,000 first printing.

[How to Find a Higgs Boson—and Other Big Mysteries in the World of the Very Small](#) Houghton Mifflin Harcourt

In this book, the interaction between the Higgs boson and the top quark is studied with the CMS detector at the LHC via the search for the associate production of the Higgs boson with one (tH) or two (ttH) top quarks. These processes are very rare and thus a high particle selection efficiency by the trigger system is essential. The selection of hadronically decaying tau leptons, expected from the Higgs boson decays, is tackled in the first part, where the trigger is optimized for Run 2 and Run 3 and a novel machine-learning based trigger for the High-Luminosity LHC is developed. The second part presents the analysis of tH and ttH where the Higgs boson decays into tau leptons, W or Z bosons with Run 2 data. The presence of multiple particles in the final state leads to the use of multivariant discriminants based on machine learning and the Matrix Element Method. The sophisticated methods used and the unprecedented amount of

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data result in the most precise cross section measurements to date.

CERN Random House

The physicist authors of *Quantum Physics for Poets* discuss the importance of the Higgs Boson in 2012 and the future of particle physics, explaining the forces and laws surrounding the "God Particle" and the ways the United States can recapture a leadership role in scientific advancement.

CERN and the Higgs Boson Johns Hopkins University Press

CERN, the European Laboratory for particle physics, regularly makes the news. What kind of research happens at this international laboratory and how does it impact people's daily lives? Why is the discovery of the Higgs boson so important? Particle physics describes all matter found on Earth, in stars and all galaxies but it also tries to go beyond what is known to describe dark matter, a form of matter five times more prevalent than the known, regular matter. How do we know this mysterious dark matter exists and is there a chance it will be discovered soon? About sixty countries contributed to the construction of the gigantic Large Hadron Collider (LHC) at CERN and its immense detectors. Dive in to discover how international teams of researchers work together to push scientific knowledge forward. Here is a book written for every person who wishes to learn a little more about particle physics, without requiring prior scientific knowledge. It starts from the basics to build a solid understanding of current research in particle physics. A good dose of curiosity is all one will need to discover a whole world that spans from the infinitesimally small and stretches to the infinitely large, and where imminent discoveries could mark the dawn of a huge revolution in the current conception of the material world.

*El bosón de Higgs no te va a hacer la cama* DEBATE

The recent observation of the Higgs boson has been hailed as the scientific discovery of the century and led to the 2013 Nobel

Prize in physics. This book describes the detailed science behind the decades-long search for this elusive particle at the Large Electron Positron Collider at CERN and at the Tevatron at Fermilab and its subsequent discovery and characterization at the Large Hadron Collider at CERN. Written by physicists who played leading roles in this epic search and discovery, this book is an authoritative and pedagogical exposition of the portrait of the Higgs boson that has emerged from a large number of experimental measurements. As the first of its kind, this book should be of interest to graduate students and researchers in particle physics.

*The H Boson* Springer

*Particles, Fields, Space-Time: From Thomson's Electron to Higgs' Boson* explores the concepts, ideas, and experimental results that brought us from the discovery of the first elementary particle in the end of the 19th century to the completion of the Standard Model of particle physics in the early 21st century. The book concentrates on disruptive events and unexpected results that fundamentally changed our view of particles and how they move through space-time. It separates the mathematical and technical details from the narrative into focus boxes, so that it remains accessible to non-scientists, yet interesting for those with a scientific background who wish to further their understanding. The text presents and explains experiments and their results wherever appropriate. This book will be of interest to a general audience, but also to students studying particle physics, physics teachers at all levels, and scientists with a recreational curiosity towards the subject.

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Features Short, comprehensive overview concentrating on major breakthroughs, disruptive ideas, and unexpected results Accessible to all interested in subatomic physics with little prior knowledge required Contains the latest developments in this exciting field