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Beyond the Higgs: What's Next for the LHC? - with Harry Cliff - Beyond the Higgs: What's Next for the LHC? - with Harry Cliff by The Royal Institution 3,158,759 views 6 years ago 59 minutes - What is the future of the world's biggest **physics**, experiment? And what intriguing hints of new **physics**, are around the corner?

Introduction

What is a Higgs

What are particles

The Cosmic Pie

Unified Forces

The Large Hadron Collider

The Blue Tube

The Tunnels

ATLAS

How do you find a Higgs

The string of bad news

A new bump

Excitement

Harrys experiment

Direct searches

How do particles decay

Indirect measurements

lepton universality

Standard model

New measurements

The Large Hadron Collider and the beginning of physics | James Beacham | TEDxBerlin - The Large Hadron Collider and the beginning of physics | James Beacham | TEDxBerlin by TEDx Talks 42,896

views 7 years ago 15 minutes - James Beacham is a experimental high-energy particle **physicist**, with the ATLAS Collaboration at the **Large Hadron Collider**, at ...

Introduction

The Large Hadron Collider

The little bump

The missing gravity

What if

Have we reached the end of physics? | Harry Cliff - Have we reached the end of physics? | Harry Cliff by TED 654,660 views 8 years ago 13 minutes, 58 seconds - Why is there something rather than nothing? Why does so much interesting stuff exist in the universe? Particle **physicist**, Harry Cliff ...

The General Theory of Relativity

Dangerous Numbers

The Strength of the Higgs Field

Dark Energy

What Dark Energy Is

Strength of Dark Energy

String Theory

How does an atom-smashing particle accelerator work? - Don Lincoln - How does an atom-smashing particle accelerator work? - Don Lincoln by TED-Ed 600,352 views 10 years ago 3 minutes, 36 seconds - An atom smasher, or particle accelerator, collides atomic nuclei together at extremely cold temperatures, very low air pressure, ...

Intro

The Large Hadron Collider

Engineering Superlatives

Smashing

Precision Instrumentation Enabled Physics at the LHC & QIS Enabled Discovery for High Energy Physics - Precision Instrumentation Enabled Physics at the LHC & QIS Enabled Discovery for High Energy Physics by Caltech PMA 358 views 3 years ago 53 minutes - Speaker: Dr. Cristian Peña, Lederman Fellow, Fermilab Host: Dr. Maria Spiropulu - Caltech Date: February 25, 2021 Title: ... Exploring Nature at the Smallest Length Scales at the Large Hadron Collider

Quantum Sensors

4d Vertexing Reconstruction

Low Gain Avalanche Detector

Timing Layer

The Cms Timing Detector

The Mandel Effect

How Typical Dark Matter Experiments Work

Quantum Fields: The Real Building Blocks of the Universe - with David Tong - Quantum Fields: The Real Building Blocks of the Universe - with David Tong by The Royal Institution 6,248,427 views 7 years ago 1 hour - According to our best theories of **physics**, the **fundamental**, building blocks of matter are not particles, but continuous fluid-like ...

The periodic table

Inside the atom

The electric and magnetic fields

Sometimes we understand it...

The new periodic table

Four forces

The standard model

The Higgs field

The theory of everything (so far)

There's stuff we're missing

The Fireball of the Big Bang

What quantum field are we seeing here?

Meanwhile, back on Earth

Ideas of unification

CERN's supercollider | Brian Cox - CERN's supercollider | Brian Cox by TED 1,225,043 views 15 years ago 16 minutes - <http://www.ted.com> "Rock star **physicist**," Brian Cox talks about his work on the **Large Hadron Collider**, at CERN. Discussing the ...

How the Large Hadron Collider Works in 10 Minutes - How the Large Hadron Collider Works in

10 Minutes by Ridddle 891,758 views 3 years ago 10 minutes, 3 seconds - eldddir #eldddir_earth #eldddir_tech.

1,232 magnets

Refrigerant

Higgs boson

Tsar Bomba

What Does it Take to Make a Universe? - with Harry Cliff - What Does it Take to Make a Universe? - with Harry Cliff by The Royal Institution 260,994 views 2 years ago 57 minutes - Using the latest experimental data from the **Large Hadron Collider**, in Geneva and labs and observatories around the world, ...

Introduction

The title

Two halves

Apple Pie Experiment

Dalton and Newton

Apache Point Observatory

The Periodic Table

Universe Composition

The Big Bang

Nuclear Fusion

Early Universe Conditions

Three Basic Building Blocks

Quantum Fields

Standard Model

Antimatter

Higgs Field

Planck Energy

Large Hadron Collider

LHCB

New Evidence

New Questions

Eric Weinstein & Stephen Wolfram: Theories of Everything - Eric Weinstein & Stephen Wolfram: Theories of Everything by Dr Brian Keating 185,253 views 5 months ago 1 hour, 50 minutes - Are you ready for the battle of the theories of everything? Eric Weinstein and Stephen Wolfram, two mathematical mavericks and ...

Intro

Why are young people so interested in theories of everything?

Is it possible to reconcile Eric's and Stephen's theories?

The notion of paradigm shifts

Too simplistic or too complex?

Comparing and contrasting different approaches

Of what value is a theory if it's not testable?

The role of AI and the simulation hypothesis

Final thoughts

Outro

Elon Musk Says CERN's Large Hadron Collider is 'Demonic Technology' - Elon Musk Says CERN's Large Hadron Collider is 'Demonic Technology' by Factnomenal 422,895 views 1 year ago 8 minutes, 23 seconds - Ten years ago, several **physicists**, working on the **Large Hadron Collider**, the world's most powerful scientific experiment at CERN, ...

A Brief History of Quantum Mechanics - with Sean Carroll - A Brief History of Quantum Mechanics - with Sean Carroll by The Royal Institution 4,016,329 views 4 years ago 56 minutes - The mysterious world of quantum mechanics has mystified scientists for decades. But this mind-bending theory is the best ...

UNIVERSE SPLITTER

Secret: Entanglement

There aren't separate wave functions for each particle. There is only one wave function: the wave function of the universe.

Schrödinger's Cat, Everett version: no collapse, only one wave function

The Crazy Mass-Giving Mechanism of the Higgs Field Simplified - The Crazy Mass-Giving Mecha-

nism of the Higgs Field Simplified by Arvin Ash 1,065,895 views 1 year ago 13 minutes, 3 seconds
- CHAPTERS: 0:00 Sources of mass 2:33 Blinkist Free Trial 3:51 Particles are excitations in Fields
6:09 How Mass comes from ...
Sources of mass
Blinkist Free Trial
Particles are excitations in Fields
How Mass comes from interaction with Higgs
Why do some particles interact and others don't?
How our universe would not exist without Higgs
2022's Biggest Breakthroughs In Astronomy And Physics | James Webb | Pluto | Black Hole |
Wormholes - 2022's Biggest Breakthroughs In Astronomy And Physics | James Webb | Pluto | Black
Hole | Wormholes by The Secrets of the Universe 272,185 views 1 year ago 14 minutes, 34 seconds
- 2021 saw great discoveries and achievements in **physics**,, astronomy, and space exploration. In
this video, we have discussed the ...
The Farthest Star Ever
Pluto is Alive!
The James Webb Era Begins
Wormholes
Black Hole Image
Worlds Smartest Kid Just Revealed CERN Just Opened A Portal To Another Dimension - Worlds
Smartest Kid Just Revealed CERN Just Opened A Portal To Another Dimension by Cosmos Lab
1,561,130 views 1 year ago 11 minutes, 26 seconds - It's easy to be overwhelmed by the grandeur
of the cosmos if you take the time to really look at what's going on. Science has just ...
ELIZABETH NANCE
PARALLEL UNIVERSE
BLACK HOLE
FIONA BROOME
DARK MATTER
HIGGS DISCOVERY
X PARTICLES
Emily Levesque Public Lecture: The Weirdest Stars in the Universe - Emily Levesque Public Lecture:
The Weirdest Stars in the Universe by Perimeter Institute for Theoretical Physics 2,353,759 views 6
years ago 1 hour, 8 minutes - In her March 7 public lecture at Perimeter Institute, Emily Levesque
discusses the history of stellar astronomy, present-day ...
Introduction
Welcome
hertzsprungrussell diagram
Spica
Fatal Juice
Comparison to the Sun
Evolution of Stars
Cold Stars
First Research Project
Writing the Paper
The Largest Star
Supernovas
Fusion
Supernova
Crab Nebula
Whirlpool Galaxy
Dramatic Supernova
Standard Supernova
Luminous Blue Variables
De Carina
Neutron Stars
Neutron degeneracy pressure
Neutron star matter
Pulsars
Black Holes

Star Death
Vallar
Swift
Time Domain Astronomy
Gravitational Waves
TimeDomain Astronomy
Parkes Observatory
Perry Tongs
Microwaves
Radio Bursts
Red Supergiant Neutron Stars
Supergiant Neutron Stars
Supernova Neutron Stars
Red Supergiant
Beta Decay
Starstuff
Supernovae
Supernova 1054
Galactic Supernova
Eclipse
Quantum Field Theory - Quantum Field Theory by Fermilab 359,032 views 8 years ago 5 minutes, 30 seconds - The subatomic world has long been known to be truly mind-bending, with particles that are waves and vice versa. Cats are alive ...
Coding the Cosmos: Does Reality Emerge From Simple Computations? - Coding the Cosmos: Does Reality Emerge From Simple Computations? by World Science Festival 444,603 views Streamed 3 months ago 2 hours, 32 minutes - Stephen Wolfram joins Brian Greene to explore whether the ultimate theory of the universe might emerge from a computationally ...
Brian Greene Introduction
Welcome Stephen Wolfram
How powerful are Wolfram's tools?
What is it like to be the weather?
Computationally bounded observers like us
Are all possible mathematical outcome out there somewhere?
Where is the Wolfram software at today?
Heisenberg, Bohr, and Einstein thought space was discreet
When we look back at Einstein's field equations it become obvious
Is the an early primordial node in the Ruliad?
Is the universe only three dimensional for observer like us?
How big is the elementary length?
What happens to black holes in the model?
Is it Everett's and the many worlds approach to Quantum Mechanics?
How do you think about GD6 in the multi way graph?
How does time dilation work in Wolfram's models?
What is the ultimate goal?
The bridge to string theory
Why can't you go faster than light? - Why can't you go faster than light? by Fermilab 4,916,856 views 6 years ago 8 minutes, 37 seconds - One of the most counterintuitive facts of our universe is that you can't go faster than the speed of light. From this single observation ...
What Happens When Things Are Going Super Fast
Special Relativity
Relativity
Is This a New Kind of Physics? - with Harry Cliff, Paula Alvarez Cartelle and Ben Allanach - Is This a New Kind of Physics? - with Harry Cliff, Paula Alvarez Cartelle and Ben Allanach by The Royal Institution 413,447 views 2 years ago 44 minutes - At the end of March 2021, scientists working on the LHCb experiment at CERN in Geneva reported an unusual discrepancy in ...
Indirect
g-2 experiment
The Flavour Problem
The Four Fundamental Forces of nature - Origin & Function - The Four Fundamental Forces of nature

- Origin & Function by Arvin Ash 617,741 views 3 years ago 13 minutes, 48 seconds - The best way to understand this and how these forces emerged is to visualize what happened at the big bang, when everything ...

Newton's law of universal gravitation

What keeps positively charged protons held together in the nucleus of atoms?

Binding energy of Strong force is responsible for most of the mass of atoms

Beta minus decay (electron emission)

1. How does a force between particles work? What is the mechanism?

Everything About Quantum Physics In 2 Hours - Everything About Quantum Physics In 2 Hours by Theories of Everything with Curt Jaimungal 36,957 views 1 year ago 1 hour, 59 minutes - Using natural units and high school mathematics, this is the technical lesson I wish I had when I was younger for quantum ...

The Why: A shift in perspective

The What: What to expect to learn in this video

The How: The TOE approach

What are Natural Units?

Conversion equations

Newton's constant / Entropy / Why speed is "dimensionless"

A Neutron star's pressure

Proportionate strengths of forces / "Wave function" is not a function

Knots / Extra dimensions

Inside Microtubules / Consciousness / Penrose's theory

Naïve Vacuum Expectation / Dark Energy

Calculating with the Schwinger Limit / Superforce

Annihilating electron - positron pairs / Quantum gravity / Black holes

Length of an atom

Cutting a solid / How "special relativity" challenges what it means to "exist"

Laconically deriving the Casimir Pressure falloff / Rigor in math and physics

Analyzing the Sun

Intuiting the radius of an electron / Classical Mechanics break down

Scales of the LHC / God particle

Summary

What's next?

Particle Physics Explained Visually in 20 min | Feynman diagrams - Particle Physics Explained Visually in 20 min | Feynman diagrams by Arvin Ash 347,993 views 3 years ago 18 minutes - The 12 fermions are depicted as straight lines with arrows in the diagrams. The arrows represent the "flow" of fermions. No two ...

Intro & Fields

Special offer

Particles, charges, forces

Recap

Electromagnetism

Weak force

Strong force

Higgs

Upgrading the Particle Physics Toolkit: The Future Circular Collider - Harry Cliff, John Womersley - Upgrading the Particle Physics Toolkit: The Future Circular Collider - Harry Cliff, John Womersley by The Royal Institution 171,127 views 4 years ago 59 minutes - The 'Future Circular Collider' (FCC) is a plan for a 100km ring-shaped particle accelerator buried underground near Geneva, ...

THE STANDARD MODEL OF PARTICLE PHYSICS

ELECTRON-POSITRON COLLIDERS

Rey technology for proton-proton collider: Very high field magnets

Project management plan

shift in emphasis since the end of the Cold War

Why do governments support basic research?

Ril'he biggest economic challenges of our time

Driving technological innovation

Superconducting magnets

Attracting young people into science

Computation and the Fundamental Theory of Physics - with Stephen Wolfram - Computation and the Fundamental Theory of Physics - with Stephen Wolfram by The Royal Institution 356,299 views 3 years ago 1 hour, 18 minutes - Stephen Wolfram is the creator of Mathematica, Wolfram|Alpha and the Wolfram Language; the author of A New Kind of Science; ...

Cellular Automata

The Principle of Computational Equivalence

Simplest Possible Universal Turing Machine

Consequences of this Principle of Computational Equivalence

Principle of Computational Equivalence

The Standard Minimal Model for Road Traffic Flow

Minimum Model for Road Traffic Flow

Fundamental Raw Material of the Universe

What's the Universe Made of

What Is Space

Space Is Discrete

Cellular Automaton

Progression of Time

Causal Invariance

Curvature

Theory of Gravity

Continuum Equations

Causal Graph

Faster than Light Travel

The Feynman Path Integral

Quantum Observation Frames

Bronchial Graph

Map of Quantum Entanglements

Computational Irreducibility

Approaches to Mathematical Physics

The Map of Particle Physics | The Standard Model Explained - The Map of Particle Physics | The Standard Model Explained by Domain of Science 1,433,059 views 2 years ago 31 minutes - The standard model of particle **physics**, is our **fundamental**, description of the stuff in the universe. It doesn't answer why anything ...

Intro

What is particle physics?

The Fundamental Particles

Spin

Conservation Laws

Fermions and Bosons

Quarks

Color Charge

Leptons

Neutrinos

Symmetries in Physics

Conservation Laws With Forces

Summary So Far

Bosons

Gravity

Mysteries

The Future

Sponsor Message

End Ramble

Hints of a new force of nature at the LHC - Hints of a new force of nature at the LHC by Harry Cliff 4,637 views 2 years ago 2 minutes, 21 seconds - The LHCb experiment at CERN has reported evidence that could point toward new **fundamental**, particles that we've never seen ...

Intro

Beauty quarks

What have we found

The muon

Health warning

The LHC Experiments - The LHC Experiments by Fermilab 40,922 views 9 years ago 6 minutes, 55 seconds - The **Large Hadron Collider**, or **LHC**, is the world's biggest particle accelerator, but it can only get particles moving very quickly.

Introduction

Particle Detectors

ATLAS CMS

Collisions

ATLAS

CMS

Conclusion

LHC First Physics : Highlight of the day and Press conference, March the 30th, 2010 - LHC First Physics : Highlight of the day and Press conference, March the 30th, 2010 by stevebd1 1,744 views 13 years ago 8 minutes, 21 seconds - 'The first high-energy collisions were achieved at 13.06 today at all four points of the **LHC**, ring. Collisions occurred after a few ...

What's Going Wrong in Particle Physics? (This is why I lost faith in science.) - What's Going Wrong in Particle Physics? (This is why I lost faith in science.) by Sabine Hossenfelder 1,496,696 views 1 year ago 21 minutes - Why do particle **physicists**, constantly make wrong predictions? In this video, I explain the history and status of the problem. My list ...

Intro

The History of the Problem

The Cause of the Problem

Common Objections and Answers

What Will Happen?

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