

Dark Matter Astrophysical Observations Dark Matter

[#dark matter](#) [#astrophysical observations](#) [#cosmology](#) [#gravitational effects](#) [#galaxy rotation curves](#)

Explore the compelling evidence for dark matter through astrophysical observations. This enigmatic substance, inferred through its gravitational effects on visible matter, plays a crucial role in the universe's structure and evolution, driving intense research in modern cosmology and particle physics.

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Dark Matter Astrophysical Observations Dark Matter

galaxy. Thought to consist of dark matter, halos have not been observed directly. Their existence is inferred through observations of their effects on the motions... 22 KB (2,863 words) - 15:36, 8 January 2024

In cosmology and physics, cold dark matter (CDM) is a hypothetical type of dark matter. According to the current standard model of cosmology, Lambda-CDM... 22 KB (2,525 words) - 02:30, 16 December 2023

other astrophysical observations, tilt the balance toward new physics invoking axions." Although both dark matter and ordinary matter are matter, they... 140 KB (15,304 words) - 11:42, 19 March 2024

would be composed mostly of normal matter, like modern stars, but a high concentration of neutralino dark matter present within them would generate heat... 9 KB (967 words) - 08:10, 11 March 2024

self-interacting dark matter (SIDM) is an alternative class of dark matter particles which have strong interactions, in contrast to the standard cold dark matter model... 7 KB (775 words) - 21:13, 9 March 2024

including non-emitting ordinary atoms. Baryonic dark matter may occur in non-luminous gas or in Massive Astrophysical Compact Halo Objects (MACHOs) – condensed... 4 KB (381 words) - 11:39, 14 June 2023

energy in order to agree with such observations. This energy density has two components: cold dark matter and dark energy. Each contributes to the theory... 10 KB (1,301 words) - 05:10, 6 March 2024

Warm dark matter (WDM) is a hypothesized form of dark matter that has properties intermediate between those of hot dark matter and cold dark matter, causing... 7 KB (944 words) - 08:23, 1 October 2023

by galactic tidal interactions, since these gas clouds do not contain dark matter, so they do not technically qualify as galaxies. Distinguishing between... 18 KB (2,071 words) - 12:19, 12 March 2024

A dark-energy star is a hypothetical compact astrophysical object, which a minority of physicists think might constitute an alternative explanation for... 6 KB (618 words) - 19:22, 27 December 2023

model and a mixed cold/hot dark matter model. The first direct evidence for dark energy came from supernova observations in 1998 of accelerated expansion... 85 KB (9,507 words) - 16:47, 19 March 2024

similar to the photon of electromagnetism but potentially connected to dark matter. In a minimal

scenario, this new force can be introduced by extending... 18 KB (2,195 words) - 02:55, 19 February 2024

kind of astronomical body that might explain the apparent presence of dark matter in galaxy halos. A MACHO is a body that emits little or no radiation... 9 KB (1,206 words) - 17:23, 4 January 2024

Indirect detection of dark matter is a method of searching for dark matter that focuses on looking for the products of dark matter interactions (particularly... 23 KB (3,612 words) - 04:27, 12 February 2024

The Lambda-CDM, Lambda cold dark matter, or Λ CDM model is a mathematical model of the Big Bang theory with three major components: a cosmological constant... 95 KB (11,037 words) - 07:52, 19 March 2024

C. S.; White, S. D. M. (1996). "The Structure of Cold Dark Matter Halos". The Astrophysical Journal. 463: 563–575. arXiv:astro-ph/9508025. Bibcode:1996ApJ... 34 KB (4,288 words) - 21:33, 29 January 2024

that we have already entered an era dominated by dark energy, but examination of the roles of matter and radiation are most important for understanding... 13 KB (1,938 words) - 23:47, 21 December 2023
hypothetical, it would resolve a number of astrophysical and cosmological problems related to dark matter. There is consensus today among astronomers... 45 KB (5,469 words) - 00:54, 23 December 2023

observations started in August 2013. The last observing session was completed on 9 January 2019. After completion of the Dark Energy Survey, the Dark... 49 KB (5,461 words) - 23:56, 10 January 2024
set up from various astrophysical and cosmological observations, which would exclude that they contribute significantly to dark matter over most of the plausible... 49 KB (6,081 words) - 13:45, 5 March 2024

Dark Matter, an Astrophysical Mystery – Physics Documentary - Dark Matter, an Astrophysical Mystery – Physics Documentary by Physics Made Easy 1,931 views 3 years ago 13 minutes, 11 seconds - Dark matter, accounts for more than 80% of all matter that populates the spacetime of our Universe. What is **dark matter**,, is one of ...

What is our Universe made of?

What is going on?

Galactic Structure

Can Axions Be Dark Matter? - Can Axions Be Dark Matter? by Fraser Cain 23,189 views 8 months ago 57 minutes - We still don't know what is **Dark Matter**,. We can see its effects but we don't know what it's made of. However, with their latest ...

Intro

WIMPs vs Axions

Observations

Implications for Cosmology

Where axioms come from

Difficulties with observations

How can the results be confirmed or debunked

Open-mindedness in science

Gravitational lenses

Outro

Dark Matter: Crash Course Astronomy #41 - Dark Matter: Crash Course Astronomy #41 by Crash-Course 1,738,426 views 8 years ago 12 minutes - Today on Crash Course Astronomy, Phil dives into some very **dark matters**,. The stuff we can actually observe in the universe isn't ...

Introduction: Dark Matter

Discovery of Dark Matter

What is Dark Matter?

Axions

Gravitational Lensing and the Bullet Cluster

What Effect Does Dark Matter Have on the Universe?

Review

What Is Dark Matter? An Astrophysicist Explains | Edge Of Knowledge | Ars Technica - What Is Dark Matter? An Astrophysicist Explains | Edge Of Knowledge | Ars Technica by Ars Technica 128,028 views 2 years ago 14 minutes, 36 seconds - We see evidence for **dark matter**, everywhere we look but proving hypotheses around it has been exceptionally difficult.

Intro

Dark Matter

Rotation Curves

Universal Density Profile

How Does Dark Matter Work

What Is Dark Matter

Outro

Astrophysical Constraints on Dark Matter - Astrophysical Constraints on Dark Matter by KISSCaltech
417 views 3 years ago 24 minutes - Watch Drew Newman from Carnegie Observatories talk about **Astrophysical**, Constraints on **Dark Matter**, at the fourth edition of the ...

Intro

Cosmic microwave background

Matter power spectrum

Structure of collapsed objects ("halos")

Outline

Warm dark matter

Self-interacting dark matter

Probing DM-DM Interactions with Colliding Clusters

Constraints from Galaxy-DM Separation in Merging Clusters

Galaxy cluster density profiles

Dark matter cores from supernova feedback

Why low-mass halos should be dim

Density profiles in classical MW satellites

Future constraints from MW satellites

Constraints on WDM from early galaxies

Lya Forest

Substructure Imaging with Strong Lensing

The current state

Some exciting future directions

dark matter is not a theory - dark matter is not a theory by Angela Collier 448,549 views 9 months ago 43 minutes - dark matter, is not a theory. I tried to increase the sound on this---let me know how it went? I keep getting comments that my sound ...

Dark Matter and Dark Energy | Neil deGrasse Tyson #astrophysics - Dark Matter and Dark Energy | Neil deGrasse Tyson #astrophysics by The Science Fact 326,096 views 1 year ago 37 seconds – play Short

The Story of Cosmology: The Big Bang, Dark Matter, Dark Energy & the Great Mysteries of the Universe - The Story of Cosmology: The Big Bang, Dark Matter, Dark Energy & the Great Mysteries of the Universe by Let's Find Out 969,143 views 11 months ago 3 hours, 14 minutes - Description: This is an exploration of the greatest discoveries in cosmology, the great scientists and astronomers behind them, ...

INTRO

THE FIRST INSTANT AFTER THE BIG BANG

THE COSMIC MICROWAVE BACKGROUND

THE FIRST GALAXIES

THE UNIVERSE ON THE LARGEST SCALES

THE GREATEST QUESTIONS IN COSMOLOGY

LIGHT AND MATTER

WHAT IS COSMOLOGY?

THE EVOLUTION OF TELESCOPES

EINSTEIN'S UNIVERSE

EDWIN HUBBLE'S UNIVERSE

LEMAITRE'S UNIVERSE

ZWICKY'S NON-LUMINOUS MATTER

PENZIAS AND WILSON HEAR THE

THE EVOLUTION OF SPACE TELESCOPES

COSMOLOGY BEFORE INFLATION AND DARK ENERGY

INFLATION, THEN DARK ENERGY

OUTRO: WHERE THIS VIDEO CAME FROM

How We Know Dark Matter Exists | The Evidence for Modern Physics - How We Know Dark Matter Exists | The Evidence for Modern Physics by Wondrium 188,574 views 1 year ago 31 minutes - Want to stream more content like this... and 1000's of courses, documentaries & more? Start Your Free

Trial of Wondrium ...

What is Dark Matter?

Fritz Zwicky Coins the Term "Dark Matter"

Vera Rubin's Observations on Dark Matter

Gravitational Lensing and Distortion

Possible Explanations for Dark Matter

Modified Newtonian Equations

Testing Theories on Dark Matter

What is dark matter? – with Peter Fisher - What is dark matter? – with Peter Fisher by The Royal Institution 236,846 views 1 year ago 56 minutes - What exactly is **dark matter**,? We can't see it, but we can observe its ghostly gravitational effects on the behaviour and evolution of ...

Introduction

History of particle physics

Outline

Expanding Universe

Hubble Extremely Deep Field

Examples of Dark Matter

The Coma Cluster

The Schmidt Telescope

Andromeda

Standard Model

Galaxy

Particles

Double beta Decay

CDMS

Axions

Dark Matter: The Elusive Fibers of the Universe - Xuejian Shen - 06/23/2023 - Dark Matter: The Elusive Fibers of the Universe - Xuejian Shen - 06/23/2023 by Caltech Astro 4,265 views Streamed 8 months ago 2 hours, 2 minutes - Despite being effectively invisible, **dark matter**, is believed to compose 85% of the material of the universe--but what is it? Join us ...

Announcements

Intro to Dark Matter Presentation

Dark Matter Presentation

Q&A for Dark Matter Presentation

What assumptions go into dark matter simulations?

Does dark matter evolve over time?

Is dark matter connected to dark energy?

Is there evidence for dark matter vibration or spin?

Intermission

Q&A Panel Introductions

What is the mass of an eV (electron volt)?

How are dark matter halos observed for dwarf galaxies?

Do JWST observations change our view of bottom-up galaxy formation?

How are the distributions of dark matter and ordinary matter different?

Does dark matter not make disks?

Can particle collider experiments rule out certain dark matter candidates?

Can we gain insight about dark matter from gravitational wave observations?

What is the limiter in understanding dark matter: theory or observations?

Are there any galaxies without dark matter?

Is there a topological relation between dark matter and normal matter?

Tell us more about Pluto and friends!

Is dark matter represented as a particle or a field in simulations?

Can the observations be explained without dark matter?

Does dark matter have different phases: solid, liquid, gas?

Are there dark forces which only apply to dark matter?

Why do we simulate astrophysical systems?

Are there many types of dark matter?

Why do stars oscillate and are they observable?

Do scientists still hold to MOND as an alternative to dark matter?

How do we believe the Kuiper Belt formed?

What is the consensus on phosphene gas in Venus' atmosphere?

What does dark matter do?

Has dark matter changed its overall amount over time?

How can one succeed at learning math (or anything)?

Concluding Remarks

Where Did Dark Matter And Dark Energy Come From? - Where Did Dark Matter And Dark Energy Come From? by History of the Universe 2,837,363 views 2 years ago 45 minutes - AND check out his Youtube channel: <https://www.youtube.com/c/AlasLewisAndBarnes> Incredible thumbnail art by Ettore Mazza, ...

Introduction

Using Gravity

The Great Sculptor

What Is Dark Matter? (Shining A Light)

The Great Repeller

What Is Dark Energy? (The Greatest Mystery)

Astrophysics with Neil DeGrasse Tyson | Dark Matter, Particle Physics, & Cosmic Science - Astrophysics with Neil DeGrasse Tyson | Dark Matter, Particle Physics, & Cosmic Science by Wondrium 321,955 views 7 years ago 32 minutes - Want to stream more content like this... and 1000's of courses, documentaries & more? Start Your Free Trial of Wondrium ...

Scientific Breakthroughs Come From Small Observations

Understanding the Pioneer Anomaly

Dark Matter Found in Galaxy Clusters and Galaxies

The Dark Matter Problem Persists To This Day

Einstein's Greatest Blunder That Wasn't

How Physics Is Ignorant of the Universe

The Zero Net Total Energy of the Universe

The Collision of Andromeda and the Milky Way

Revealing the Nature of Dark Matter - Revealing the Nature of Dark Matter by Fermilab 502,949 views 9 years ago 1 hour, 5 minutes - Dr. Dan Hooper, a Theoretical **Astrophysicist**, at Fermilab, explores the current status of the **dark matter**, search and some new ...

Introduction

Dan Hooper

The Elements

Dark Matter

Galactic Rotation

Galaxy Clusters

Cosmic Microwave Background

The Four Forces

Dark Matter Ideas

The Large Hadron Collider

Direct Detection

Fermi Gamma-ray Space Telescope

Timeline

Pulsars

Supermassive Black Holes

Large Hadron Collider

cartography

turning point

Hawking Radiation

How Do You Know

Hope

Amazing ways to look for dark matter - Amazing ways to look for dark matter by Fermilab 127,901 views 2 years ago 9 minutes, 38 seconds - Dark matter, remains one of the unsolved mysteries of modern physics. In this video, Fermilab's Dr. Don Lincoln explains two ...

Plot Twist: There's No Dark Matter. Our Theory of Gravity is Broken - Plot Twist: There's No Dark Matter. Our Theory of Gravity is Broken by The Secrets of the Universe 1,037,060 views 1 year ago 10 minutes, 20 seconds - It has been 90 years since the concept of **dark matter**, was introduced in astronomy. It lies at the heart of the most successful ...

Dark Matter Series: Astrophysical Sources - Dark Matter Series: Astrophysical Sources by KIPAC 773 views Streamed 7 months ago 1 hour, 10 minutes - Welcome to 'Discover Our Universe' at KIPAC! This is a series of free, public lectures in **astrophysics**,. The lectures are designed ...

Dark Matter and Dark Energy: The Frontier of Astronomy - Dark Matter and Dark Energy: The Frontier of Astronomy by Professor Dave Explains 94,246 views 5 years ago 11 minutes, 55 seconds - For a while now, we've been discussing all of things we know about the universe. What about some of the things we don't know?

Introduction

Dark Matter

Dark Energy

The Absurd Search For Dark Matter - The Absurd Search For Dark Matter by Veritasium 8,262,437 views 1 year ago 16 minutes - ... Special thanks to Patreon supporters: Inconcision, Kelly Snook, TTST, Ross McCawley, Balkrishna Heroor, Chris LaClair, ...

Dunkle Materie

Dark Matter

Cosmic Microwave Background

Neil deGrasse Tyson: What is Dark Matter? What is Dark Energy? - Neil deGrasse Tyson: What is Dark Matter? What is Dark Energy? by Science Time 371,485 views 2 years ago 10 minutes, 4 seconds - Neil deGrasse Tyson offers a comprehensive analysis of what **dark matter**, and **dark energy**, could be. With his usual wits & style he ...

What Is the Universe Made of

Dark Matter

First Direct Detection of Dark Matter

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