

本集内容

Changing how we view the Universe 大型强子对撞机实验结果或改变宇宙认知

学习要点

有关“scientific discovery（科学发现）”的词汇

边看边答

How long does the particle called 'a beauty quark' exist for?

文字稿

The Large Hadron Collider was built to discover brand new particles – and transform our understanding of physics.

建造大型强子对撞机是为了探索全新的粒子，并改变我们对物理学的认知。

By crashing particles together harder than they'd been smashed before – the researchers there may have done just that.

通过以前所未有的强度撞击粒子，研究人员们可能实现了这一初衷。

They've observed subatomic particles behaving in a way that can't be explained by the current theory of physics.

研究人员们观察到，次原子粒子的反应方式无法用现有的物理学理论来解释。

The scientists may have made one of the biggest discoveries in physics.

科学家们可能已经取得了物理学界最重大的发现之一。

Dr Mitesh Patel, Imperial College

We were literally shaking. We, you know, were shaking like a leaf the first time we looked at these results because, if it does turn out to be real, it could really have **profound consequences** for physics in general.

米特什·帕特尔博士 英国帝国理工学院

“我们当时真的在发抖。当我们第一次看到实验结果时，激动得浑身发抖，因为如果这个发现被证实，就可能对物理学产生**深远的影响**。”

The team have been creating a particle called 'a beauty quark'. It exists for only a fragment of a second, and then decays into two other particles – what it should do in equal numbers – but it doesn't, possibly because a mystery force is interrupting the process.

这个研究团队正在制造一种名叫“美夸克”（又称为“底夸克”）的粒子。它只存在远远不到一秒，就衰变成另外两种粒子，两种粒子的数量本应相等，但结果并非如此，这可能是因为一种神秘的力量阻断了这个过程。

Physicists can explain the world around us through the action of four fundamental forces – electricity, gravity and two nuclear forces.

物理学家可以通过四种基本力的作用来解释我们身边的世界，即电（磁）力、引力和两种核力。

But in recent times, these forces haven't been able to explain a few things, such as the movement of galaxies, or indeed why the Universe exists at all.

然而，近来，这四种基本力已无法解释一些现象，比如星系的运动，甚至是宇宙存在的根本原因。

But this new finding is creating a lot of excitement because it contains **hints** that there might be a fifth force of nature that's completely new to science.

这一新发现非常振奋人心，因为有**迹象**表明：可能存在第五种科学界尚未知晓的自然力。

If there is a fifth force, it could answer a lot of questions currently **baffling** astronomers.

如果第五种力确实存在，那它就可能解答目前**困扰**天文学家的诸多问题。

Professor Chris Parkes, CERN

There are these big questions in physics that we don't have the answers to. And the hope would be, as the LHC (Large Hadron Collider) continues to make discoveries, maybe we could **shed some light on** those big questions of physics.

克里斯·帕克斯教授 欧洲核子研究组织（CERN）

“物理学中有一些我们无法回答的重大问题。希望随着大型强子对撞机不断取得发现，或许我们可以**进一步理解**这些重大的物理学问题。”

These very early results aren't definitive yet – more data is needed – but they are generating a lot of excitement about the prospect of a **giant leap forward** in our understanding of the Universe.

仅凭这些非常早期的实验结果，还不能完全证实该发现，仍需要更多的数据，但试验结果振奋人心，让人们期待能取得对宇宙认知的巨大飞跃。

词汇

profound consequences 深远的影响

hints 迹象，暗示

baffling 困扰，难住

shed some light on 对…有所启示，有助于理解…

giant leap forward 巨大的飞跃

视频链接

<https://bbc.in/3rqjw9x>

问题答案

It exists for only a fragment of a second.