

ANTIMATTER

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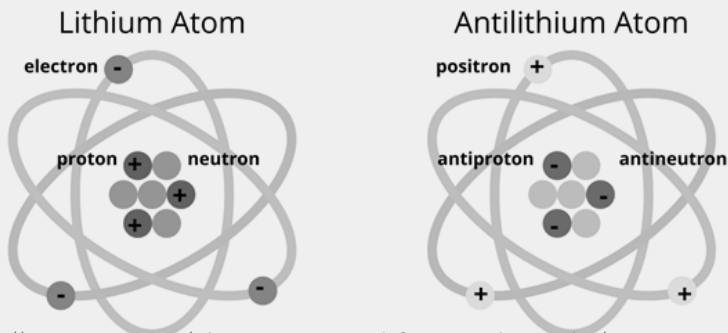
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WHAT IS IT?

Antimatter is a kind of matter that consists of the antiparticles of the corresponding particles of ordinary matter.



Matter vs Antimatter



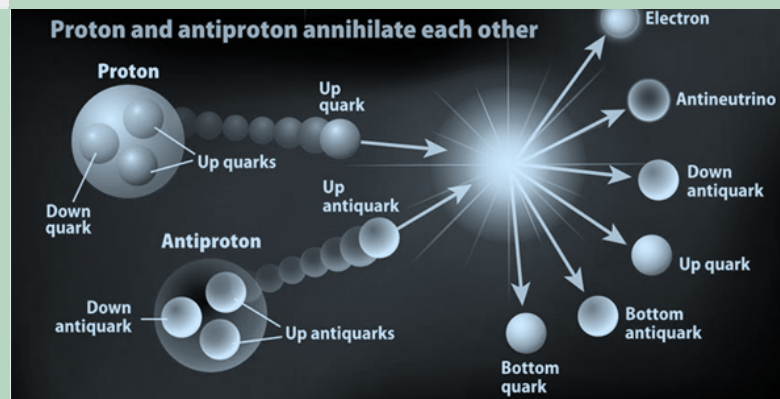
<https://sciencenotes.org/what-is-antimatter-definition-and-examples/>

ANTIMATTER VERSUS ORDINARY MATTER

Matter and antimatter particles are always produced as a pair. Antimatter could be described as a mirror image of matter. The only real difference is the charge and spin, which are opposite. They share the identical mass.

WHEN ANTIMATTER MEETS MATTER

An encounter between a particle and its anti-particle will lead to annihilation. In this process both particles will be destroyed, and a large amount of energy will be released.



<https://worldbuilding.stackexchange.com/questions/65646/would-this-positron-reactor-work>

NORMAL OR ANTI-GRAVITATION

The Standard Model predicts that gravity should have the same effect on matter and antimatter. However, it's not easy to observe the effects that gravity has on antimatter. The experiments have to trap antimatter and decelerate it by reducing its temperature just above absolute zero. Physicists must use neutral antimatter particles to avoid the interference by electrical forces that are more powerful. All this because gravity is one of the weakest forces.

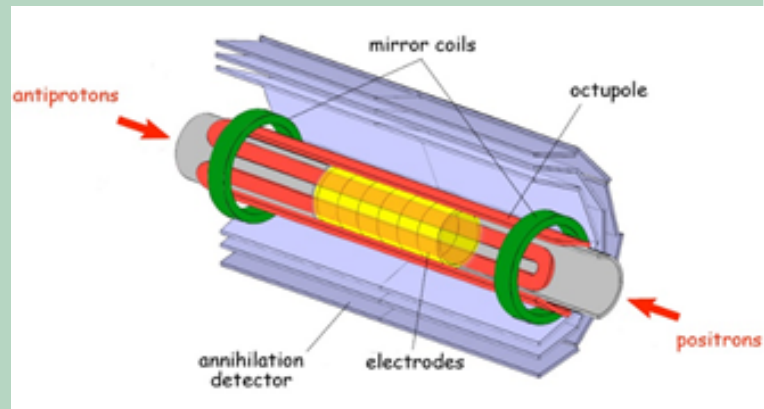


Paul Dirac
The first to propose anti-particles.

https://en.wikipedia.org/wiki/Paul_Dirac

CONTAINERS FOR ANTIMATTERS

Anti-hydrogens that were created, were at first too energetic and "hot" to be easily studied. That's why they needed to be trapped. The ALPHA-collaboration at CERN was the first to trap and store these atoms for over 16 minutes. This was only the beginning. A more recent project called PUMA aims to trap a record of one billion antiprotons.



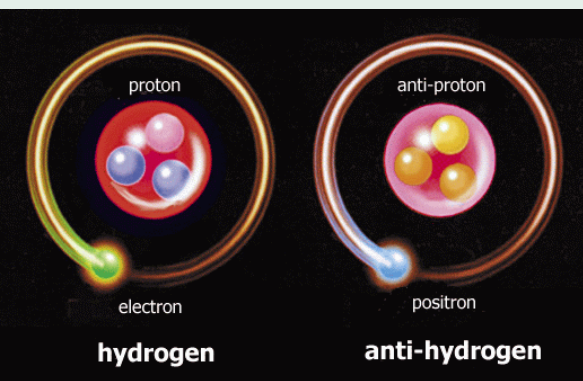
<https://www.quantumdiaries.org/tag/minimum-magnetic-field-trap/>

QUANTITY

Nowadays no more than one billionth of a gram can be produced per year.

TYPES OF ANTIMATTER

The first discovered antimatter is called the positron. After that, the first antiatoms were created in laboratories. The first of them was the anti-hydrogen. Many other experiments followed. An example is the experiment Athena between 2002 and 2004. In 2016, the experiment ASACUSA managed to produce and trap antihydrogen atoms.



<https://surrealsciencestuff.wordpress.com/tag/antihydrogen/>

ANTIMATTER IN 'ANGELS AND DEMONS'

Scientific laboratories aren't the only places where is talked about antimatter. Hollywood is an example. We can find lots of scientific films talking about antimatter, such as Angels & Demons. In the Hollywood film the 'Illuminati' tries to destroy the Vatican by using an antimatter bomb. Real physicists like to use the movie as an opportunity to talk about antimatter in real life. However, not all the anti-matter statements made in the film are correct with what has been discovered in the meantime.