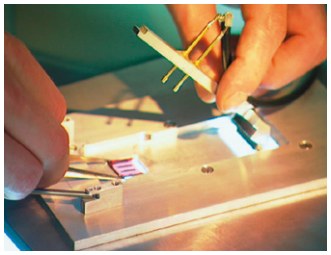
SCIENCE
TECHNOLOGY
MEDICINE

CLIPS
03–05 MIN.


EinSteinchen

VERSIONS
Albanian, Arabic, Bengali, Bosnian, Bulgarian, Chinese, Croatian, English, French, Greek, Hindi, Indonesian, Macedonian, Persian, Polish, Portuguese, Romanian, Russian, Serbian, Spanish, Turkish:
12 x 03–05 min.

RIGHTS
Worldwide VoD M

ORDER NUMBER
12 4665 | 01–12

01 Nuclear Medicine: A Formula and its Results SD

When an atom in a radioactive element decays, then part of the matter that makes up its nucleus is transformed into energy. This is part of the proof that backs up Einstein's realization that mass and energy are two sides of the same coin. Without Einstein's discovery that is expressed in the formula $E=mc^2$, some later medical developments would not have been possible. Artificially produced radioactive substances known as radiopharmaceuticals play a major role in modern medical diagnostics and research.

02 Satellite Navigation – Einstein's Contribution to Galileo SD

Time is relative – in the field of satellite navigation, Einstein's theory has practical applications. In space, clocks tick differently than they do on Earth. But the accuracy of satellite navigation systems is dependent on how precisely the atomic clocks on board can measure time.

03 The Speed of Light – Part 1: Light Researchers SD

At the root of Albert Einstein's Special Theory of Relativity is the assumption that the speed of light never changes. Einstein said that the speed of light is a universal constant, one that always remains the same no matter where you are. Is that really the case? European researchers now want to conduct an experiment in space to find out.

04 The Speed of Light – Part 2: Radar Satellite SD

The speed of light also standardizes the exact length of a meter. That's important for large-scale surveys like those slated to be carried out by the radar satellite TerraSAR-X. The rader satellite will begin surveying Earth's surface with an accuracy never before seen in civilian applications. The new satellite, for example, will be able to map the ongoing urban sprawl of some of the world's largest cities.

05 The World's Fastest Flash SD

Laboratories all over the world have been taking part in a competition to create shorter and shorter flashes of laser light. Now physicist Ferenc Krausz has broken a new barrier. He's first to produce an attosecond pulse.
An attosecond is an unimaginable 0.000 000 000 000 000 001 of a second long. The technique that Krausz used is based on Einstein's prediction of stimulated emission. The great physicist's hypothesis helped lay the foundations for the development of that incredibly versatile tool – the laser.

06 Juggling Ultra-Cold Atoms SD

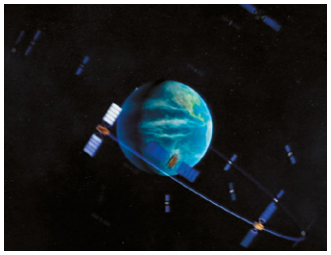
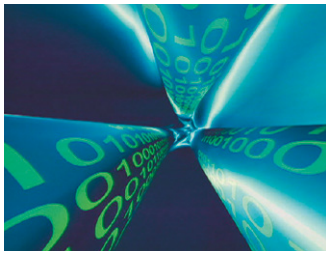
Though he's just 32 years old, Immanuel Bloch is already a professor of physics at the University of Mainz. He's an expert on a state of matter that was predicted by Albert Einstein – Bose-Einstein condensation. Immanuel Bloch has now taken things a step further. He has become the first to crack the Bose-Einstein condensation wave and regularly arrange several hundred of these special atoms into a glowing grid. In the future, grids like these could make up the basic elements of a new kind of supercomputer.

07 Cloned Atoms Through Teleportation SD

For the first time ever, Rainer Blatt was able to transfer the state of one atom to another. Although the process is called 'teleportation', no matter is transported from one spot to another. Instead, information leaps the gap. To achieve his goal, Blatt made use of what Albert Einstein described as the 'spooky action-at-a-distance between particles'. The discovery is a scientific sensation, even though the teleporting distances crossed up until now have only been a few hundredths of a millimeter.

SCIENCE
TECHNOLOGY
MEDICINE

CLIPS
03–05 MIN.

VERSIONS
Albanian, Arabic, Bengali, Bosnian, Bulgarian, Chinese, Croatian, English, French, Greek, Hindi, Indonesian, Macedonian, Persian, Polish, Portuguese, Romanian, Russian, Serbian, Spanish, Turkish:
12 x 03–05 min.

RIGHTS
Worldwide VoD M

ORDER NUMBER
12 4665 | 01–12

08 Cosmic Telescopes: Discovering Distant Galaxies SD
According to a theory first put forward by Albert Einstein, a large body of mass curves space and the light that traverses it. Clusters of galaxies create what are known as gravitational lenses. Astrophysicist Joachim Wambsganß has spent years studying this phenomena in deep space. He searches and maps massive celestial objects such as galaxies that possess strong gravitational fields. These curve or bend the space around them, and force light from even more distant galaxies and objects into a curved rather than a straight trajectory. The process also 'bundles' the light, focusing and increasing its intensity.

09 Racing down Einstein's Paths SD
Molecules in gas and fluids tend to behave in unordered and random ways. This phenomenon, first identified by the Scottish botanist Robert Brown and therefore named Brownian Motion, was also of great interest to Albert Einstein. In 1905, he published his studies on Brownian Motion. Today, his findings can help researchers solve many of the problems linked to the movement of particles.

10 Organic Solar Cells SD
What a pain: the cell phone has to be charged at the mains every few days. But in future that could be rendered obsolete by a portable charging unit in a jacket. It consists of wafer-thin organic solar cells. Like conventional silicon cells, the organic solar cells convert light energy into electrical current. The principle behind it is the photoelectric effect. Albert Einstein received the Nobel Prize in 1921 for his explanation of this phenomenon.

11 The Search for a Theory of Everything SD
For much of his life, Albert Einstein sought a formula that would describe and encompass all four fundamental forces. He failed to find a unifying theory. The tunnel in Geneva is huge – and it runs in a circle that's 27 kilometers long. Thousands of scientists all over the world are waiting with bated breath for experiments to begin in the Large Hadron Collider. It's hoped that the gargantuan apparatus will be able to generate a kind of small scale Big Bang, lasting for just fractions of a second, that will recreate the conditions just after the birth of the universe.

12 Time Travel Through Wormholes – Nothing More than a Dream? SD
As early as 1935, Albert Einstein and Nathan Rosen recognized that relativity theory did not rule out 'bridges' through space-time. Today, we call these hypothetical pathways 'wormholes'. Physicists nowadays admit that time travel through wormholes is at least theoretically possible, although journeys into the past or future have remained firmly in the realm of science fiction.