cell is proportional to the intensity of light, and the charges are then transported to the edge of the CCD matrix to be read-out. The image can finally be reconstructed from the contents of each pixel. "That is what was so wonderful at Bell Labs, we could make models to see whether they would work or not. When we made the CCD, it worked immediately, it was amazing, we never had that kind of luck before," says Boyle.

The CCD revolutionized photography as it allowed light to be captured electronically instead of on film. In addition to forming the basic building blocks of most digital cameras, CCDs are also widely used in astronomy. The Hubble Space Telescope has several CCD cameras on board, including in the recently upgraded Wide field Planetary Camera.

"CCDs are the backbone of modern astronomy," says Andrew Fabian, president of the Royal Astronomical Society. "They let professional and even amateur astronomers see objects throughout the universe with a sensitivity to light that would have been unthinkable even three decades ago."

Boyle was born in Amherst, Nova Scotia, Canada, on 19 August 1924. He served in the Royal Canadian

Physicist shares Nobel Prize for Chemistry

Venkatraman Ramakrishnan, a biophysicist from India, has shared the 2009 Nobel Prize for Chemistry for his pioneering work on the structure and function of ribosome. Found in large quantities in all living cells, ribosome is the key biological particle for the synthesis of proteins – the building blocks of animals and plants. Ramakrishnan, who is based at the Medical Research Council's Laboratory of Molecular Biology at the University of Cambridge, UK, will share the SEK 10m prize with Ada Yonath of the Weizmann Institute of Science in Israel and Thomas Steitz of Yale University in the US. Born in Tamil Nadu, India, in 1952, Ramakrishnan received his early education in India before completing his PhD in physics in 1976 at Ohio University in the US. "I knew that a number of physicists had gone into biology and been successful, so I decided to switch," says Ramakrishnan. This year's chemistry laureates are not the first researchers to have used X-ray crystallography

to answer fundamental questions about the living world. Most famously, James Watson, Francis Crick and Maurice Wilkins were honoured in 1962 for the discovery that DNA molecules – which contain the "blueprint for life" – have a double-helical structure. By that time, the scientific community already knew that DNA has a relative, RNA, which is responsible for transporting genetic information from DNA to the sites where protein is created, known as ribosome. In 2006 Roger Kornberg from Stanford University was awarded the chemistry Nobel prize for using X-ray crystallography to decipher how information is copied to the messenger RNA molecule. The latest recipients have added more detail to the picture of how proteins are generated, being the first to produce X-ray diffraction patterns of ribosomes with high enough resolution to decipher the atomic locations.

James Dacey

Navy in the Second World War and then attended McGill University, receiving a PhD in physics in 1950. Boyle retired in 1979 and is a Canadian and US citizen. Smith was born in New York on 10 May 1930. He obtained his PhD in physics from the University of Chicago in 1959 after which he joined Bell Labs as a research scientist. He retired in 1986.

Knight says that while fundamental physics is behind each development, the clear applications set them apart. "I think it is excellent that the Nobel Foundation has chosen these areas of physics where they have obviously changed the world," says Knight. "Sometimes physics needs to jump up and down and say that it is capable of doing this."

Particle physics

Al-Qaeda arrest casts shadow over the LHC

CERN remains on course for the imminent switch-on of the Large Hadron Collider (LHC) despite the media frenzy following the recent arrest of a physicist who had been working at the facility. The researcher in question is a 32-year-old man of Algerian descent who is expected to face trial in France – the country in which he was arrested. His name is yet to be formally identified under French judicial rules.

The recent events began on 8 October when the man was arrested in the French city of Vienne on suspicion of having links with al-Qaeda in the Islamic Maghreb (AQIM). Within 24 hours, the press had learned that the suspect was a physicist who had been carrying out research at LHCb, an experiment at CERN designed to investigate the matter-antimatter asymmetry of the universe.

One UK researcher, who declined to be named and had been working just a few doors down from the arrested physicist at the LHCb, told *Physics World* that he was

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"gob-smacked" that his colleague had come under suspicion. "The presentations I saw from the guy were always extremely professional and very thorough," he said. Over the next few days the story was covered by a large number media outlets, particularly in the UK, where one tabloid newspaper ran the headline "COPS NICK AL-QAEDA COLLIDER".

Aware of the potential damage to CERN's reputation, the particle-physics lab was quick to clarify that the arrested man was an employee of the Ecole Polytechnique Fédérale de Lausanne in Switzerland, not CERN itself. CERN also tried to ease fears that could arise from sensationalist reporting. "CERN is a particle-physics research laboratory whose research addresses fundamental questions about the universe. None of our research has military application," it said in an official statement.

James Gillies, head of communications at CERN, who says he was frustrated at the way the story had been covered in

some sectors of the media, was forced to go on the offensive. "It was clear that we had better be ready to answer questions very quickly," he says. Gillies accepts, however, that the reaction was perhaps inevitable now that both CERN and the LHC are household names. "CERN is a much bigger story than it was a year ago – we will get a lot more coverage now."

Gillies admits that CERN is in a difficult position, as the general public is aware that the facility exists but is not familiar with the science that takes place there. "The media may see the 'nuclear' in our name and when this is added to the fear surrounding al-Qaeda – the imagination can easily run away," he says.

Meanwhile, scientists and engineers at CERN have now cooled all eight sectors of the LHC to a temperature of 1.9 K. In the coming weeks, the hardware commissioning team will gradually increase the current in all sectors to 6 kA – the value needed to guide proton beams travelling in the machine at the nominal energy of 3.5 TeV. The first high-energy collisions at this energy are now expected to take place in January.

James Dacey