

AWARDS

Religious win for physicist

A former particle physicist who became an Anglican priest has been awarded this year's Templeton Prize for progress in religion. John Polkinghorne, 71, won the £700 000 prize for his treatment of theology as a natural science. "Contemporary science is all about trying to answer the 'how'," Polkinghorne told *Physics World*. "Religion examines the meaning and purpose of life." Polkinghorne is the fourth physicist to have won the prize since 1995, following Paul Davies (1995), Ian Barbour (1999) and Freeman Dyson (2000).

Polkinghorne made his name as a particle physicist, but in 1979 – following a life as a practising Christian – he quit his post as professor of mathematical physics at Cambridge University to train as an Anglican priest. After two years as a parish priest in Bristol and a stint as a vicar in Kent, Polkinghorne returned to Cambridge in 1986. He was president of Queens' College from 1989 until he retired in 1996.

Polkinghorne thinks that science and theology are not opposed to one another and that they provide a different perspective on the world. "Both believe that there is a truth to be sought and found through the pursuit of well-motivated belief," he says. "I need the binocular approach of science and religion if I am to do any sort of justice to the deep and rich reality of the world in which



Physicist-turned-priest – John Polkinghorne.

we live."

Having written 14 books on science and religion, Polkinghorne thinks that theology must take on board contemporary scientific views. He believes, for example, that God and the big bang are compatible with each other. "But one of the main differences between science and religion is that theology is not cumulative," he says. "While there is an unchanging core at the heart of Christian belief, our interpretation of religion changes with time. Each generation has to take the understandings of faith and make them its own."

"Polkinghorne has contributed a great deal of original thought and clarification to a subject notorious for woolly thinking," says former Templeton-prize winner Paul Davies. "He has articulated a convincing case that the scientific world view is entirely consistent with a belief in a universe that has deeper meaning and purpose. Although Polkinghorne understandably charts the Christian position, his arguments may be studied by people of all faiths and none."

The prize is awarded each year by the Templeton Foundation to "encourage and honour those who advance spiritual matters". Polkinghorne says he will use the money to fund post-doc research into science and religion. "Theology, like any other subject, needs financial support," he says.

Matin Durrani

SIDEBANDS

New light cast on dark energy

A team of British and Australian astronomers has discovered new evidence that the expansion of the universe is accelerating, confirming that the universe is filled with gravitationally self-repulsive "dark energy" that pushes galaxies apart. The concept was first postulated by Einstein, who called it his "greatest scientific blunder". The new evidence has been obtained by a 27-strong team led by George Efstathiou of Cambridge University. The researchers studied the clustering pattern of 250 000 galaxies using the Anglo-Australian Telescope in New South Wales (2002 *Monthly Notices of the Royal Astronomical Society* **330** L29). By comparing the current structure with that observed in the cosmic microwave background – which preserves information about the universe when it was just 300 000 years old – the team could apply a simple geometrical test to determine the universe's composition. "It seems that Einstein did not make a blunder at all – dark energy appears to exist and to dominate over more conventional types of matter," says Efstathiou.

Harold Furth 1930–2002

Harold Furth, a pioneer of the US fusion programme and the driving force behind the Tokamak Fusion Test Reactor (TFTR) died at the end of February at the age of 72. Furth was born in Vienna and went to the US in 1941. Based on theoretical work that he and others carried out in the 1960s, Furth came up with the idea of the magnetic-confinement reactor in the early 1970s. The TFTR eventually opened in 1982 at the Princeton Plasma Physics Laboratory, where Furth served as director from 1981 to 1990. "It is very good to imagine things," Furth said in 1999, "but actually to do things and get results that make scientific sense is a solemn and inspiring path".

Willibald Jentschke 1911–2002

Willibald Jentschke, founder of the DESY research centre in Hamburg, died last month aged 90. Jentschke was director of the lab from its establishment in 1959 until 1970, and was also head of CERN for five years from 1971. DESY established a strong tradition in fundamental particle physics and also began to use the synchrotron radiation produced by its particle accelerators for more applied research. In the late 1960s Jentschke initiated plans for the DORIS electron-positron storage ring – also at DESY – that came on line in 1974.

DEFENCE

New nuclear arsenal for US

America should build a new generation of small nuclear weapons that can penetrate the Earth's surface and destroy bunkers and other protected spaces, according to a review carried out by the Pentagon. The "nuclear posture review" adds, however, that current plans to cut the US nuclear stockpile from more than 6000 warheads to between 1700 and 2200 over the next 10 years should continue.

The US currently has one nuclear weapon that can penetrate the Earth. But planners think the B-61-11 is too powerful to be used against bunkers without causing excess damage and releasing unacceptable amounts of radioactivity. Studies are therefore under way at the Lawrence Livermore, Los Alamos and Sandia national laboratories to see if the weapon could be

exploded deep in the Earth. The idea is that its seismic waves would collapse the region around the weapon, thereby reducing fallout.

Environmental groups have protested about the apparent increase in the Pentagon's willingness to employ first-use nuclear weapons. Meanwhile, several physicists have warned that downsized warheads may not have the intended effect. Roger Nelson, a consultant to the Federation of American Scientists, says that no warhead could burrow deep enough into the ground to minimize fallout. Richard Garwin – a former IBM research boss – thinks that the US will have to break a 10-year embargo on nuclear-weapons testing to make the new designs reality.

Peter Gwynne
Boston, MA