Ted received numerous awards in recognition of his seminal work on the ruby laser. A personal account of Ted's quest for the laser was published in his book *The Laser Odyssey* (Laser Press, 2000). He took great pride in the laser's medical applications and was particularly proud of his induction into the Royal College of Surgeons of England as the only nonphysician member of the society.

In his later years, Ted served as an adjunct professor at Simon Fraser University in Vancouver. SFU has established a foundation to archive his laser memorabilia.

Ted was my mentor; he taught by example, not by lecture. He had supreme confidence in his ability to analyze complex physical systems, and he generously shared that knowledge. Ted once told me he was a direct descendant of Moses Maimonides, the 12th-century Hebrew philosopher who said he could give a man a fish to feed his family for a day, or he could teach that man how to fish and feed his family for life. True to his forebear, Ted taught us how to fish.

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Bohdan Paczyński

Bohdan Paczyński, one of the greatest astronomers of the 20th century, died on 19 April 2007 at home in Princeton, New Jersey. With great courage he had battled brain cancer since 2003. His ashes were buried in Warsaw, Poland.

Born on 8 February 1940 in Soviet-occupied Vilnius, Lithuania, Paczyński and his family moved to Poland after World War II. His interest in astronomy started early; as a 14-year-old, he participated in observations of eclipsing binary stars. Educated at Warsaw University, he received his MSc in 1962 and PhD in 1964, both in astronomy. His PhD thesis, with Stefan Piotrowski as his adviser, was published as "Fluctuations in Interstellar Absorption from Star Counts in the Milky Way" (*Acta Astronomica*, volume 14, page 157, 1964). He continued his observational studies in Poland but later used foreign telescopes, including those at California's Lick Observatory in 1962–63.

Paczyński was interested in all aspects of stellar behavior, both the observational facts and the theoretical models to explain them. In the mid-1960s he became increasingly involved in the theoretical studies. The computer

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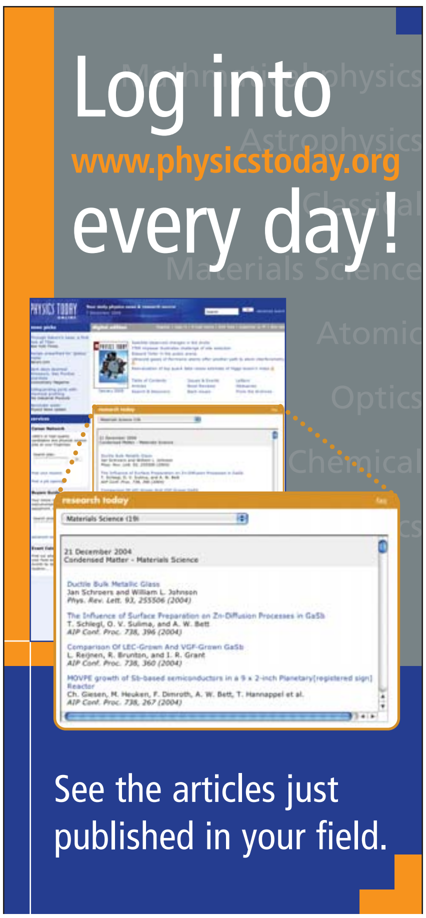
Bohdan Paczyński

program he wrote—the "Paczyński Code"—to calculate stellar evolution was an early example of open-source software. By the late 1960s, he was recognized as a leading authority on stellar evolution. In 1967 he pointed out that gravitational radiation would have important effects on the evolution of close binary stars, and in 1970 he discovered a tight relationship between stellar luminosity and core mass for stars that had exhausted hydrogen in their cores.

Paczyński was visiting Caltech when martial law was declared in Poland in 1981, and he and his family decided to remain in the US. Many universities sought to hire him; he accepted a professorship at Princeton University and moved there in 1982. He remained

Recently posted death notices at http://www.physicstoday.org/obits:

John William Gofman
21 September 1918 – 15 August 2007
Ralph Asher Alpher
3 February 1921 – 12 August 2007
Julius Wess
5 December 1934 – 8 August 2007
Frederick Walter Young Jr
13 September 1924 – 2 August 2007
S. N. Ghoshal
1923 – 30 July 2007
Lorenzo M. Narducci
25 May 1942 – 21 July 2006
Kai Siegbahn
20 April 1918 – 20 July 2007
Bernard Ephraim Julius Pagel
4 January 1930 – 14 July 2007
Benjamin Ching-Chun Shen
28 January 1938 – 12 July 2007
Donald Michie
11 November 1923 – 7 July 2007



active in his support for Polish astronomy, bringing Polish visitors to Princeton and fostering collaborations.

In 1986 Paczyński realized one could use gravitational microlensing—the time-dependent magnification of a background star by a moving foreground mass—to test whether the dark matter in our galaxy was in the form of compact objects such as white dwarfs, brown dwarfs, or planets. Although rare, Paczyński calculated that microlensing events would be just sufficiently frequent to be studied using the large CCD-based cameras that were only then becoming available. Many astronomers considered his proposal wildly optimistic, but three groups moved forward, including the Optical Gravitational Lensing Experiment led by Andrzej Udalski and Paczyński. The three experiments together placed interesting upper limits on the contribution of compact bodies (with masses between 10^{-6} and 10^{2} times the mass of the Sun) to the total mass of the outer galaxy; the results implied that the bulk of the mass is in some other form, such as weakly interacting massive particles.

Microlensing data allow study of details of the source or the lens. With graduate student Shude Mao, Paczyński pointed out in 1991 that the magnification of a gravitational lens could depend sensitively on the presence of planets around the lensing star. That phenomenon has been used to detect numerous extrasolar planets, including the first detection of a planet with an Earth-like mass.

Paczyński was the first to suggest that the giant luminous arcs observed in galaxy clusters were actually images of distant galaxies, magnified and distorted by the gravitational field of an intervening cluster of galaxies. That lensing phenomenon allows direct measurement of a galaxy cluster's mass; such measurements have greatly strengthened the case that the total mass of the galaxy cluster substantially exceeds the baryonic mass in stars and gas.

Like many other astrophysicists in the 1980s, Paczyński was attracted to the enigma of gamma-ray bursts. Most theorists at the time assumed that GRBs were located in the Milky Way, since if they were in other galaxies their luminosities would be extraordinary. However, in 1986 Paczyński wrote a paper arguing that the observed, apparently isotropic distribution of GRBs on the sky and the observed distribution in brightness were most easily understood if GRBs were located in distant galaxies.

A public debate on the GRB distance scale was held in Washington, DC, in April 1995, the 75th anniversary of the 1920 Heber Curtis–Harlow Shapley debate on the nature of spiral nebulae. Donald Lamb (University of Chicago) argued for GRBs being located in our galaxy, while Paczyński argued for cosmological distances. By that time the orbiting *Compton Gamma Ray Observatory* had obtained locations of more than 1000 GRBs, showing them to be fully consistent with isotropy. Moderator Martin Rees declared the debate a draw. However, within two years, redshifted absorption lines detected in the spectrum of a GRB afterglow conclusively demonstrated that Paczyński was right—at least some GRBs are at cosmological distances. Since then, the evidence for GRBs at cosmological distances has only strengthened.

Paczyński suspected that there might be transient astronomical phenomena that had not yet been discovered. He was passionate about using small telescopes equipped with CCD cameras to monitor the skies, and he helped create the All Sky Automated Survey to systematically monitor the brightness of tens of millions of stars. In his Russell Lecture to the American Astronomical Society one year before his death, he proposed a telescope at the Earth–Sun L1 Lagrange point to provide early warning of killer asteroids approaching Earth.

In thinking about physical systems, Paczyński demonstrated a remarkable talent for putting his finger on the important physical processes; when considering scientific controversies, he had an equally remarkable gift for picking out the essential facts, relying when possible on purely geometric arguments, and without being blinkered by the accepted wisdom (that he called "the party line").

With a rare combination of profound originality, creative thinking, exceptional command of physics, and vast astronomical knowledge, Paczyński was a vital presence in the astrophysics department at Princeton. He was extremely generous with his ideas—more than one widely quoted paper graciously acknowledges him as the source of the central idea. He took great pleasure in daily coffee-time discussions of papers on the arXiv.org astro-ph preprint server, new results in GRB circulars, or unusual microlensing light curves. His enthusiasm was infectious; his insight and clarity of thought were inspiring. He continued to enjoy doing astrophysics to his last days.

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