

## **BOHDAN PACZYŃSKI (1940 – 2007)**

Bohdan Paczyński, was one of the most important and influential astrophysicists of our time. In the last decade of his life he saw the triumph of several of the ideas he is best known for: the confirmation of the cosmological distance of Gamma Ray Bursts, the detection of dark celestial objects by gravitational microlensing, and in particular the detection through this effect of an Earth-sized, extra-solar planet.

Bohdan Paczyński was born on February 8<sup>th</sup>, 1940, in Wilno – the part of Poland occupied by the Soviet Union after the Nazi-Soviet 1939 invasion. In 1962 he graduated from Warsaw University, where he obtained his PhD two years later. As a student he was technical assistant at the Warsaw University Observatory; from 1962 until 1982 he worked at the Institute of Astronomy (which in 1975 became the Nicolaus Copernicus Astronomical Center) of the Polish Academy of Sciences, from 1979 as full professor. From 1982 he was a professor in the Department of Astrophysical Sciences at Princeton University (Lyman Spitzer Jr. Professor of Astrophysics from 1989). He died on the 19th April 2007.

His activity in astronomy began early: as a teenager he was involved in observations of binary stars at the Ostrowik station of Warsaw Observatory. He published his first paper when he was 18. The observations reported had been made with a 25 cm refractor. Apparently it had not been a traumatic experience, since 40 years later he was advocating the use of very small telescopes for the massive variability searches that became the main preoccupation of his last years.

In the mid- 60s Bohdan Paczyński's career as an observer came to an end, and within a few years he was to become one of the most important and prolific theoretical astrophysicists. His main achievement was a series of fundamental articles calculating the evolution of close binaries. The masterly 1971 Annual Review article "Evolutionary Processes in Close Binary Systems", where he describes the life of binary stars, is still among his most cited papers. This major series of articles was almost immediately followed by another: on the evolution of single stars. On the way he made several important discoveries and contributions. He was the first to realise the role gravitational radiation plays in the evolution of cataclysmic binaries, and in 1980 he showed that the minimum period observed in these systems results from

angular-momentum losses through gravitational wave emission. His articles on the origin of planetary nebulae and the common-envelope stage of binary evolution are classics of the field.

In the late seventies Bohdan Paczyński began to look for new intellectual challenges. He turned his attention to accretion of matter onto compact bodies, gravitational lensing and high-energy astrophysics. At first he was interested in discs in binaries (he found a simple method of calculating the disc's size); later he conceived a model of self-gravitating discs and made an essential contribution to thick-disc ("polish doughnut") models. He discovered (with Anna Żytkow) a regime of stable hydrogen burning on accreting white dwarfs – a result of utmost importance for models of the progenitors of the type-Ia supernovae of cosmological fame. The success of his ideas on lensing and gamma-ray bursts made him famous also outside the astronomy community.

His main strength was the ability to identify the essence of complex physical problems. He was not always right but he was always very clear. He was a very fast thinker, sometimes too fast for his students and collaborators. Quickness of mind combined with indefatigable enthusiasm for science made him a magnificent teacher and a formidable debater, even if in debates he sometimes felt frustrated by his (as he thought) insufficient English skills. As often happens with great minds, Bohdan was modest but obviously aware of his exceptional and superior talents. He was very generous with his ideas and several well-known papers owe him their existence and impact, though this can be realized only by reading the acknowledgements.

Paczyński kept up very close contacts with his homeland. Before leaving Poland he had played an important role in the development of Polish astronomy (with Józef Smak he was the initiator and then director of the Nicolaus Copernicus Astronomical Centre). In exile he organized material aid for his Polish colleagues (especially during the martial law period) but his main contribution was scientific: the Optical Gravitational Lensing Experiment (OGLE) he created with Andrzej Udalski is the best-known example.

In his last years Bohdan Paczyński became somewhat sceptical and weary of theory and models, preferring to concentrate his enthusiasm and skills on astronomy with small

telescopes and all-sky variability searches. But he did not lose his interest in theory; and continued to react to articles containing false assertions. Sometimes he did this only in private; on other occasions he wrote short papers showing, with his usual clarity, the inadequacies of the papers in question.

Bohdan Paczyński was the recipient of many prestigious awards. He was awarded, among others, the Karl-Schwarzschild-Medal of Astronomische Gesellschaft (1981), The RAS Eddington Medal (1987), the Heineman Prize (1992), the Henry Draper Medal (1997), the RAS Gold Medal (1999), the Marian Smoluchowski Medal (2000), the Bruno Rossi Prize (2000), the Bruce Medal (2002) and the Henry Norris Russell Lectureship (2006).