Obituary

David Moss (1943–2020)

Anvar Shukurov and colleagues remember a theorist known for his work on stellar and galactic magnetism, who was also a prominent marine biologist.

David Moss died unexpectedly on 30 January 2020 during a surgical operation. He is known for his contributions to the dynamo theory of galaxies, but also worked on solar and stellar magnetic fields, and especially on chemically peculiar massive stars.

David was born on 8 November 1943 in London, but his parents moved to Sheerness, Isle of Sheppey, where he spent his school years. He won a scholarship to study mathematics at St John's College, Cambridge. He then went to study for his PhD at the University of Sussex, starting with Ian Roxburgh and continuing and completing his thesis with Roger Tayler.

David's external examiner for his thesis was Leon Mestel – this started their long-term collaboration (which also involved Roger Tayler), driven by their lifelong fascination with the origin and role of magnetic fields in stars and galaxies. For many years, until his retirement, David worked in the Department of Mathematics in Manchester. He remained productive until the end, especially in the field of galactic dynamo theory.

Throughout his career, he had a numerically oriented approach to many aspects of astrophysics. His early models on the light curve paradox of W Ursae Majoris systems give a vivid account of David's contributions to this field during his time at the University of Sussex. Around this time, he also developed his interest in the magnetic field evolution of chemically peculiar stars. He was the first to model the evolution of fossil magnetic fields in massive stars.

Dynamo theory

Models of rotating magnetic stars, on which David also worked with Leon Mestel, remain influential and often-cited decades later. His earliest contribution to dynamo theory consisted of the first numerical calculation of the magnetic energy ratio of fluctuating and mean magnetic fields as a function of the magnetic Reynolds number.

Since the mid-1970s, he had maintained lasting collaborations with colleagues at Helsinki Observatory. This led to self-consistent nonlinear models of stellar differential rotation and dynamos in late-type stars. Later, by using the approach to embed galactic dynamos in spheres to circumvent the technical problem of the outer vacuum boundary conditions, he got himself immersed in the physics of galactic magnetism. This dominated much of his subsequent scientific work. David's contributions to the theory of galactic magnetic fields are extensive, addressing both the fundamental aspects of the turbulent dynamo theory and detailed comparisons with radio astronomical observations.

David's warm personality and genuine devotion to scientific endeavour, untainted by any career or exposure motives, have made his collaborations with colleagues from Helsinki, Moscow and Bonn especially fruitful and long-lasting.

Environmentalist

David had a deep lifelong interest in the sea, both as an accomplished diver and prominent marine environmentalist. He was a founder member of the UK Marine Conservation Society and a coordinator of the major catalogue *Sponges of the British Isles*, the culmination of 14 years work sponsored by the Royal Society and other organizations and, most importantly, driven by the enthusiasm of David and his collaborators. This publication remains a benchmark in our understanding of this group of marine animals and has been a remarkable achievement.

"David was a founder member of the UK Marine Conservation Society"

He was also a volunteer diver on conservation surveys in Belize and Indonesia, where he was accompanied by his wife Paddy, who studied the local flora. They shared a deep companionship and love of Nature. Sadly, Paddy died a few weeks after David.

David's work in science and environmental protection was powerfully driven by his enthusiasm and devotion to his cause, albeit expressed with his characteristic modesty and understatement. His magnetic personality will remain an inspiration to us all. ●

AUTHORS

Prof. Anvar Shukurov is professor of astrophysical fluid dynamics at Newcastle University, UK. His work on astrophysical magnetic fields started in the group of YaB Zeldovich in Moscow and has continued in close contact with the other authors of this obituary – Axel Brandenburg, John Brooke, Dmitry Sokoloff and Reza Tavakol

Deaths of Fellows

Frank Behennah
Born 17 February 1925 *Elected* 14 December 2012
Died 1 March 2020

Andrew Brock
Born 28 November 1934 *Elected* 13 October 1967
Died April 2020

Margaret Burbidge
Born 12 August 1919 *Elected* 14 April 1939
Died 5 April 2020

Heather Couper
Born 2 June 1949 *Elected* 11 May 1973
Died 19 February 2020

Kenneth Heuer
Born 30 January 1927 *Elected* 9 April 1952
Died 10 February 2020

David Moss
Born 8 November 1943 *Elected* 14 February 1969
Died 30 January 2020

John Seiradakis
Born 3 May 1948 *Elected* 10 April 1974 *Died* May 2020

Percy Seymour
Born 3 Jan 1938 *Elected* 14 Oct 1966 *Died* 11 May 2020