

# NEWSLETTER

## of the Work Group Mathematical Fluid Mechanics



Phil Roe in Oberwolfach in Sept. of 2013

### Phil Roe's biography

Philip Lawrence Roe was born on May 4, 1938 in Derby, England. He came from a blue-collar upbringing. The school system noticed he was a bright kid and gave him the training so that he was able to be accepted to Cambridge University. There he obtained a Bachelor in engineering and applied math in 1962.

Phil was an independent minded person. This shows in the choices he made in life and in his research. So in 1962 he first began to work at the Royal Aircraft Establishment until 1984. He then joined the more academic environment of Cranfield University, where we first got to know each other in 1986.

In the 1980s numerics of conservation laws had progressed well so that the University of Michigan at Ann Arbor (USA) aerospace department hired both Phil Roe and Bram van Leer in 1990. Ann Arbor is where Phil lived for the rest of his life.

A favorite pastime of Phil's was woodwork. His ability was quite accomplished and insightful, leading to beautiful furniture.

Still in England, Phil married his first wife Sue. They had two children, Natasha and Gerard. In Ann Arbor Phil met his second wife Jacqui. Phil has 9 grandchildren.

### Newsletter no. 5 (2026)

#### Phil Roe \*1938 - †2026

Phil Roe passed away on April 26, 2026, just over a week shy of his 88th birthday. Towards the end of his life he suffered from organ deterioration, which drained his energy more and more. This was at loggerheads with Phil's unabated strong interest in pushing forward his scientific pursuit (which then was Active Flux), much to his frustration. His wife Jacqui's untiring efforts to smoothen things was truly a blessing for him.

Phil's strong will, that lasted until the end of his life, scientifically is reflected in his independent and unique way of thinking. An illustration is his view late in life of 2 and 3-dim compressible Euler flow as a splitting between nonlinear advection and the spread of information (which he called acoustics) in this moving framework. An early incarnation of this insight (where to distribute the fluctuations to, in a moving frame) in one space dimension was his Riemann solver published in 1981. After this Roe solver his attempt to find a multi-dimensional analogue lead him first to pursue residual distribution. When Phil was in his mid-seventies these thoughts culminated in him devising his Active Flux concepts - ideas that are now inspiring the work of various groups (Rémi Abgrall, Wasilij Barsukow, Christiane Helzel and myself, to name a few).

Of course there were many more important contributions of his, which he typically shared generously. An example are his contributions to computing MHD (his scaling of the eigensystem; noticing with Powell the usefulness of Godunov's symmetrization). His British pragmatism coupled with deep insight lead to successful tools in computational practice that really worked.

Phil Roe made a profound and enduring influence on the computational fluid mechanics community. He has been an inspiration for many, we shall deeply miss him.



The last conference Phil attended in person was ICOSAHOM 2025 in Montréal. He gave a lecture in a mini-symposium on Active Flux on July 14, 2025. This picture from the same day shows the in-person speakers of this mini-symposium.

front row: Phil Roe with his wife Jacqui

second row: myself, Xianyi Zeng, Amelie Profeteye, Lisa Lechner, Maria Han-Veiga