

Preface

Ken Hines came to Melbourne University as an undergraduate in 1944, was appointed a senior lecturer at the University in 1960, and promoted to reader in 1966. He retired in 1991 but continued to do research in physics until his death on 23rd February 2005. On 18th March 2005 several of Ken's colleagues participated in a memorial conference in his honour. The papers delivered at this conference form the core of this book, but there are other chapters written by some who could not be present, but wished to contribute to this celebration of Ken's career.

Ken was a talented theoretical physicist, with a great gift for teaching and for supervising, guiding and mentoring students. Notable in his CV is the list of students who did a MSc with Ken, and then, with Ken's encouragement, went on to do their PhD elsewhere. These students, and his own PhD students went on to establish noteworthy careers in Australia and overseas. It is a great pleasure that so many of them have been able to contribute to this volume, dedicated to the celebration of Ken's life and his physics.

After his honours degree in cosmic ray physics, and a time doing cosmic ray research on Macquarie Island, he completed his PhD in theoretical physics and then worked at Harwell on fast breeder reactors. This research was a part of the U.K. development program on such reactors, leading to their construction in the late 1950s and experimental and commercial use subsequently. He then returned to the Australian Atomic Energy Commission's research establishment at Lucas Heights working on reactor physics. He continued these studies on reactor physics for a brief period after coming to Melbourne, and then moved into plasma physics, an area of interest he maintained in many ways throughout his career. His interest moved from laboratory plasmas to astrophysical plasmas, including some unusual ones, such as particle-antiparticle plasmas. This was a subject which was of great astrophysical interest for a time, when it was realised by Alfvén that such plasmas would form in the boundary region between matter and

anti-matter galaxies in the universe, and the search for the annihilation radiation from them was actively pursued. At about the time he was working on this problem, Ken arranged a visit by Alfvén to Melbourne. In his later work, Ken turned to a detailed study of the properties of tachyons, and to the study of the plasma physics involved in accretion on black holes.

Hannes Alfvén was one of Ken's many international contacts who were able to visit Australia. Another was Dirk ter Haar of Oxford, who came to be a friend of many of us in Melbourne. Ken's last international collaboration was with a former Melbourne student, Fulvio Melia of the University of Arizona. Fulvio has contributed a chapter to this book which provides an account of the results of that collaboration. All of his international friends enriched our lives in the School of Physics at Melbourne University.

For many years Ken played a significant role in two of the ongoing conference series in Australian physics, the plasma physics conferences sponsored by the Australian Institute of Nuclear Science and Engineering and held at Lucas Heights every second year, and the Australian Mathematical Society's Applied Mathematics Conferences. Ken's contribution to these conferences do not appear in his publications list, as proceedings were not published, but his formal contributions were often overshadowed by his contribution to the discussion, during conference sessions, at the dinner table and late into the evening.

As you will gather from the obituary which appeared in the Melbourne Age which is part of Chapter 1, Ken's skills were not confined to physics, but extended to literature, the languages and culture of Germany and Italy, and to music. He was a well-known face of the School of Physics on the campus, and spent many years on the executive of the Staff Association. He also spent 6 years as the Deputy Head of the School of Physics.

By his teaching, research and fellowship he enriched the life of the Melbourne University School of Physics, and the lives of those who worked in it and passed through it. Ken's contributions should be celebrated, and we are pleased to be able to do so with this volume of contributions by his friends.

Ken Amos
Bruce McKellar