The contributors

G. S. Agarwal is a distinguished theoretical physicist best known for his many contributions to modern optics, in areas ranging from spatial dispersion theory to resonance phenomena and non-classical states of the radiation field.

He works at the Central University in Hyderabad, where he has built up a well-known school. He is a Fellow of the Indian Academy of Sciences, the Indian National Science Academy, and a recipient of the Max Born Prize of the Optical Society of America.

M. V. Berry is a renowned theoretical physicist at the University of Bristol, who has made seminal contributions to the physics of wave and semiclassical phenomena and the applications of singularity theory and modern classical dynamics. He has visited India often and has close contacts with scientists here (as indeed in many parts of the world!). He is an Honorary Fellow of the Indian Academy of Sciences and a Fellow of the Royal Society of London and a recipient of its Maxwell medal.

Rajendra Bhandari of the Raman Research Institute has worked in a wide variety of areas – the magnetism of solid oxygen for his doctoral work, conceptual foundations of quantum and statistical physics including an early study of the role of the environment in quantum measurement, and the precision measurement of a telescope surface by laser metrology. Over the last seven years, he has focused his attention on the geometric phase and related topics, both from the experimental and theoretical points of view.

C. Cohen-Tannoudji, Professor of Atomic and Molecular Physics, Collége de France, Paris, is a leading expert in quantum optics. He is among the very few in the field who has demonstrated how theory and experiment go together. Two of the best known among his many contributions are the dressed-atom formulation of interaction between radiation and matter, and the related concept of light-induced shifts. The article in this issue brings out his recent interest in the trapping and cooling of atoms by near-resonant radiation. Many of his research students have gone on to make outstanding contributions themselves, and his Les Houches lectures are regarded as masterpieces. He has recently written a book on *Atom–photon interactions* with Dupont-Roa and Grynberg, while his earlier two-volume text on quantum mechanics is widely used because of its innovative style and approach to the subject. He was recently awarded the 1993 Charles Hard Townes Award of the Optical Society of America.

M. R. Deshpande is in Astronomy and Astrophysics Division of Physical Research Laboratory, Ahmedabad. His scientific interest encompasses study of Active Galactic Nuclei, star-forming regions, comets, interplanetary medium, pulsar, etc. His current responsibilities include setting up a 1.2 m infrared telescope at Gurushikhar, Mt. Abu and radio telescopes at Ahmedabad and Rajkot.

Peter Hannaford is a Chief Research Scientist at the Division of Materials Science and Technology, CSIRO, Melbourne, Australia. His research career started with the Mössbauer effect, and then moved on to the spectroscopy of discharges in atomic vapours where he introduced new techniques like cathodic sputtering and used them to uncover novel phenomena in time-resolved fluorescence. In the early seventies and again in the early eighties, he worked in Prof. George Series' laboratory in the area of level-crossing phenomena. His major interests have centred around laser spectroscopy, determining atomic properties of great interest in astrophysics with high precision. Most recently, in collaboration with Prof. Geoffrey Opat at the University of Melbourne, he has been developing new techniques to slow down atomic beams for use in atom interferometry, a theme touched upon in his article.

U. C. Joshi is in Astronomy and Astrophysics Division of Physical Research Laboratory, Ahmedabad. His current interests are in polarimetric study of star-forming regions and Active Galactic Nuclei, especially the BL Lac objects. He is presently working on the study of interacting galaxies using CCD imaging.

Bryan Kibble is at the National Physical Laboratory, Teddington, UK. His early work, some of it described in his article, was in the area of modulation effects in atomic resonance fluorescence. Since then, he has been involved in the continuing effort for high precision determination of the fundamental constants such as the gyromagnetic ratio of the proton, the Rydberg constant, etc. Currently, he manages the NPL efforts to realize the basic SI electrical units, which were instrumental in the worldwide adoption, in 1991, of new and more accurate standards involving the Josephson effect and the quantum Hall effect.

N. V. Madhusudana is at the Liquid Crystal Laboratory at the Raman Research Institute, where he has carried out a rich variety of experimental and theoretical studies of the macroscopic and microscopic properties of liquid crystals over the last two decades. Recent areas include surface effects, instabilities in electric fields, etc. He is a Fellow of the Indian Academy of Sciences.

Rajaram Nityananda works at the Raman Research Institute, currently in the areas of gravitational

dynamics and optics applied to astronomy. He is a Fellow of the Indian Academy of Sciences and editor of *Pramana-J. Phys.*, published by the Academy. His earlier work includes applications of the Maximum Entropy class of methods to image processing and crystallography, and topics in polarization optics.

David Pegg works at the Department of Physics at Griffith University, Brisbane, Australia. His research interests have included radio-frequency spectroscopy (especially optical double resonance in atoms), nuclear magnetic resonance, and quantum optics. Although himself a theoretical physicist, he has collaborated extensively with experimental physicists and chemists. A good fraction of his work deals with long standing conceptual issues in quantum physics such as the EPR correlations, the nature of the phase variable, quantum jumps, squeezed states, etc. Among his other interests are the nature of time in a quantum mechanical world view, and the absorber theory of radiation, both of which impinge on cosmology.

V. Radhakrishnan is a radio astronomer at the Raman Research Institute in Bangalore. He is best known for his observations of the polarization of non-thermal radio sources, Jupiter, and pulsars (on the basis of which he was led to propose the currently accepted polar cap model for pulsar radiation) and for leading a definitive study of the state of neutral hydrogen in the interstellar medium. He has built up a well-known group working in the areas of radio astronomy and pulsars at the Raman Institute. He is a Fellow of the Indian Academy of Sciences and the Royal Swedish Academy.

G. S. Ranganath is in the Raman Research Institute, Bangalore, India. He started his research career in Crystal Optics. He worked on a variety of problems in the magneto-optics and piezo-optics of single and polycrystalline media. Later he changed over to the study of liquid crystals where he has contributed to the hydrodynamics, elasticity and topological defects of these materials. His interests in problems in crystal optics continues 'even now'. He is a Fellow of the Indian Academy of Sciences.

G. W. Series, an eminent spectroscopist has made many contributions to the study of the interaction of atoms and radiation and is the author of a classic work on the spectrum of atomic hydrogen. At the Clarendon Laboratory in Oxford, he was the centre of an active school of experimental and theoretical research, and some of the work there is described in his own article and that by Kibble in this issue. He is a Fellow of the Royal Society of London, and has visited India as the Raman Professor of the Indian Academy of Sciences, of which he is an Honorary Fellow.

Santiago Tapia is at the Lincoln Laboratories at the Massachusetts Institute of Technology and currently works in the area of advanced technology electro-optic systems. He is an expert in polarimetric techniques which he has applied both to problems of astronomy, such as magnetic white dwarfs and quasars, as well as in space research related activities such as the tracking and monitoring of artificial satellites. He discovered the first magnetic white dwarf in a binary system, and pioneered the technique of searching for the class of objects known as blazars using a polarimetric criterion. He now works on managing the telescope subsystems for a large telescope being constructed in Hawaii for space surveillance applications.

K. S. Viswanathan is a theoretical physicist who has contributed much to condensed matter and plasma physics. He was amongst the earliest to discover what is now called the van Hove singularity in crystals. He headed the department of Applied Mathematics of the National Aeronautical Laboratory and later the department of Mathematics, Kerala University. He is a Fellow of the Indian Academy of Sciences.

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