

## Preface

Three quarters of the century has passed since the synergy between scientific discovery and technological advances enabled Karl Jansky to open a new window on the Universe, marking the birth of radio astronomy. Since then, radio astronomy has become one of the major tools for studying the Universe. Radio galaxies with their enormously energetic clouds of relativistic electrons and cosmic jets that extend up to millions of light years into space, a broad variety of atoms and molecules, from neutral hydrogen to complex organic conglomerates, cosmic microwave masers, the cosmic microwave background radiation, quasars, pulsars, gravitational lenses and extra-solar planetary systems were all discovered in radio domain. Radio telescopes have also been used to measure the relativistic bending of electromagnetic waves which pass near the limb of the Sun, to establish the existence of gravitational radiation and measure continental drift. The progress of radio astronomy is driven by the needs of fundamental science and is based on the state-of-the-art developments in technology.

Since its first steps, radio astronomy has made huge progress, resulting in the improvement of sensitivity by many orders of magnitude and approaching micro-arcsecond angular resolution. This progress will continue in the XXI century with the advent of new radio astronomy facilities on the ground (LOFAR, ALMA, SKA) and in space (Planck, next generation space VLBI systems). In this book, the current state of radio astronomy is framed by several retrospective reviews and introductions to the next generation facilities. Views at radio astronomy from other domains, optical astronomy and high energy astrophysics, are also presented.

Advances of modern radio astronomy were in the focus of the symposium “Radio Astronomy at 70: from Karl Jansky to microjansky”, which was held under the auspices of the annual Joint European National Astronomy Meeting (JENAM) in Budapest, Hungary, 27–30 August 2003. More than 30 contributed papers from that symposium have been published recently in *Baltic Astronomy* (2005, Vol. 14, No. 3).

This book contains a set of invited review presentations given at the symposium. They cover a range of scientific topics in extragalactic and galactic radio astronomy studies as well as recent developments in radio astronomy techniques aimed at the next generation radio astronomy facilities.

On behalf of the organisers and participants of the symposium, we express our gratitude to the sponsors of the event and this publication: the European Astronomical Society, Hungarian Academy of Sciences, Eötvös Loránd University, Konkoly Observatory, Eötvös Loránd Physical Society, Netherlands Foundation for Research in Astronomy (ASTRON), Joint Institute for VLBI in Europe, Hungarian Scientific Research Fund, EC FP5 Infrastructure Cooperation Network RadioNET and EC FP6 Integrated Infrastructure Initiative RadioNet. We are grateful to

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Most of all, we are grateful to all the authors of this book for their efforts in the increasingly old-fashioned art of writing papers for a real “paper” publication as opposed to putting powerpoint files on a web site. We do hope that their nice work will be appreciated by the readers.

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