

PREFACE

Astrometry is on the threshold of great changes due to the fact that this decade, alone, is witnessing an improvement of stellar positions equivalent to the total improvement of the previous two centuries. The Hipparcos Satellite has concluded its observations, and the catalog is in preparation. Preliminary results assure that the Hipparcos catalog will provide positions, parallaxes and annual proper motions for over 100,000 stars with accuracies of 1.5 milliarcseconds. In addition, the Tycho catalog will provide positions of about 30 milliarcseconds accuracy for over 1 million stars, and annual proper motions with 3 milliarcsecond accuracy will subsequently be obtained by means of first epoch positions from the Astrographic Catalog.

Optical interferometers on the ground are beginning operation, and these instruments can provide observational accuracies of approximately one milliarcsecond. Also, the traditional reference frame based on the Fundamental Catalog of bright stars is being replaced by the extragalactic reference frame, based on radio sources with accuracies of one milliarcsecond. Thus, astrometry will change from a fundamental reference frame defined in terms of the dynamical reference frame of the solar system with accuracies of 100 milliarcseconds to a space-fixed, extragalactic reference frame with accuracies of one milliarcsecond. Future astrometric observations should be in the 1 – 100 milliarcsecond accuracy range.

There are a number of concepts for future astrometric instruments in space. Most of these can provide sub-milliarcsecond astrometric accuracies. Many of them are optical interferometers. Thus, it was time to hold a symposium that could summarize the present status of astrometry, consider the scientific benefits from increased accuracy in astrometry, and review the concepts for sub-milliarcsecond astrometry.

This symposium was one of six symposia scheduled at the same location as the IAU General Assembly, and overlapping in time with the General Assembly. It was held from Monday, August 15, through Friday, August 19, 1994, with a break for the opening session of the General Assembly. The symposium was sponsored by Commissions 4, Ephemerides; 8, Positional Astronomy; 9, Instruments and Techniques; 19, Rotation of the Earth; 24, Photographic Astrometry; 26, Double and Multiple Stars; 27, Variable Stars; 35, Stellar Constitution; 42, Close Binary Stars; 44, Astronomy from Space; and 45, Stellar Classification.

The Scientific Organizing Committee was chaired by J. Kovalevsky from France, and included F. Arias, Argentina, A. Baglin, France, J. Einasto, Estonia, M. Grenon, Switzerland, E. Høg, Denmark, Y. Kondo, U.S.A., M. Miyamoto, Japan, L.V. Morrison, U.K., M.A.C. Perryman, U.K., J.H. Schrijver, Netherlands, P.K. Seidelmann, U.S.A., C. de Veigt, Germany, and S.H. Ye, China, Nanjing. The Local Organizing Committee was chaired by J.H. Schrijver. The sessions were chaired by E. Høg, L.V. Morrison, S.H. Ye, M. Miyamoto, J.H. Schrijver, J. Kovalevsky, F. Arias and P.K. Seidelmann.

The Symposium was organized into three broad subjects. The first was Current Advances in Astrometry and included developments in ground-based astrometric techniques in large catalogs, space missions, and extragalactic reference frames. The second general topic was the Current and Future Needs for Very Accurate Astrometry. This included stellar astrophysics, galactic populations, kinematics and dynamics, extragalactic astrometry, and reference frames and solar system. The final area was the Expected Developments in High Precision Astrometry. The highlights of the meeting are summarized in the final paper by the chairman of the Scientific Organizing Committee.

In addition to 65 oral presentations and discussions there were approximately 50 Poster Papers. These proceedings are organized in a similar manner to the meeting. As usual there are some papers that were presented orally, but that have not been successfully put into a written version. The editors wish to thank all the authors for their efforts in preparing timely, written versions of their papers, and in following the composition instructions necessary for the preparation of these proceedings.

The Symposium agreed for the sake of uniformity to adhere to the following abbreviations. Milliarcsecond should be abbreviated to milliarcsec or mas, without any hyphens; but sub-milliarcsecond is written with a hyphen; and microarcsecond becomes μ arcsec or μ as.

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