

PREFACE

In 1977 there was a very successful conference in Tallinn on the Large-Scale Structure of the Universe (IAU Symposium 79). Since then a number of developments have greatly increased the body of observational data of cosmological significance.

The Einstein X-ray telescope, launched in late 1978, has shown that the diffuse X-ray background is almost certainly due to quasars. Several independent investigations of the apparent magnitude distribution of faint galaxies have placed new limits on the scale of inhomogeneities in the universe, as well as on the role of galaxy evolution. Ever more remote clusters of galaxies are being discovered and redshifts measured for them that have completely overwhelmed Minkowski's remarkable 1970 achievement of observing $z = 0.46$ for 3C295 (yet the largest measured redshift for a quasar remains at $z = 3.53$). The microwave background radiation has still frustrated our attempts to find small-scale anisotropies, but there is a new question on the interpretation of the spectrum, and a very exciting large-scale anisotropy indicating the global peculiar velocity of our galaxy now seems to be well established.

With so many new findings, and in some cases lack of findings where they were expected, it seemed highly appropriate to schedule a conference on these observations dealing with objects of cosmologically interesting redshifts. At the original suggestion of Dr. Malcolm Longair, it seemed particularly fitting to hold the conference in California, where the famous Mount Wilson telescopes as well as the Lick Observatory 3-m and Palomar 5-m telescopes have played such historical roles in optical cosmology, and are still very active today.

The conference (IAU Symposium 92), held at the University of California, Los Angeles, 28–31 August 1979, was attended by 146 participants from 15 countries. There were 33 invited papers and 15 short contributions. The social events included an opening reception, a Hollywood Bowl concert, a Los Angeles Dodgers baseball game, a trip to Disneyland, and, in lieu of a closing banquet, a steak barbecue on Mount Wilson, at a location a short walk from the Observatory, which held open house in the telescope domes. Through the scientific sessions and lengthy conversations at social gatherings, the participants had an opportunity to bring each other up to date on problems of observational cosmology. The purpose of this volume is to share this knowledge with the broader astronomical community.

Following the current procedure for publication of IAU Symposium proceedings, the papers are all reproduced from camera-ready copy submitted by the authors. Invited papers are reproduced in full, and the

short contributions by abstracts. The one exception is a contribution by I.D. Karachentsev, who was invited to the Symposium and originally had intended to attend, but in the end was unable to do so. The editors decided that his paper is of sufficient interest and cogency to the other papers actually presented at the Symposium to warrant inclusion in the present volume.

The discussions of the papers have been typed from written versions of questions and comments prepared by questioners immediately following their remarks after each paper, and from written versions of the responses prepared by each speaker. As is inevitable (we suppose) a small fraction of these written statements never were returned to the editors. However, the published discussion is (by actual count) 82 percent complete.

We are most grateful to the majority of the authors who were prompt in delivering their camera-ready manuscripts. Only one paper has not been received in time for inclusion in the Proceedings, a regrettable omission, but, we think, not a crippling one. We also owe thanks to the many graduate students at UCLA who assisted greatly in providing transportation and in clerical tasks during the scientific sessions, and we owe special thanks to Mrs. Edna Ford for her splendid service in helping with the organization of the Symposium itself. Finally, we thank Mr. Robert O'Daniel, who has done such a fine job in typing the discussion and in retyping a few "problem" manuscripts.

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P.J.E. Peebles, Editors