

## PREFACE

Galaxy interactions, once an obscure backwater of extragalactic astronomy, have moved front and center after several decades of observational and theoretical research. Interactions are now seen to play a key role in the formation of galaxies, triggering of starbursts and active galactic nuclei, formation of star clusters, formation of dwarf galaxies, metal enrichment of the intergalactic medium, and galaxy evolution in clusters and the field. The goal of this Symposium was to further the development of *a new cosmological perspective tracing the effects of interactions from the current epoch back toward high redshifts*.

The ongoing torrent of data from ground-based telescopes (e.g. Keck, VLA, IRAM, NRO, & OVRO) and space-borne observatories (e.g. *HST*, *ROSAT*, *ASCA*, *IRAS*, & *ISO*) is now revealing interacting galaxies at nearly every wavelength from radio to X-rays. In the past few years, *HST* has imaged nearby merging systems in unprecedented detail, clarified the nature of blue cluster galaxies at intermediate redshifts, provided tantalizing hints of interactions in some high-redshift QSOs, and produced the clearest look yet at the formation and evolution of galaxies at  $z \sim 3$  and beyond in the Hubble Deep Field (HDF). On the ground, radio and millimeterwave arrays are probing the spatial and kinematic distribution of the gas and dust in violently interacting galaxies and starburst systems. Theorists have responded by developing sophisticated models treating the dynamics of both stars and gas, pushing beyond pairs and small groups to study interactions in cluster environments, and striving to understand how interactions, mergers, and galactic activity at high redshift are connected to the properties of galaxies at  $z \sim 0$ .

IAU Symposium 186 on *Galaxy Interactions at Low and High Redshifts* pooled the expertise of observers, numerical simulators, and theoreticians to review the new observations and relate them to theoretical models. The Symposium took place 26–30 August, 1997, as part of the XXIII General Assembly in Kyoto, Japan. Over 300 astronomers attended the meeting, and nearly 200 of them presented results either as oral papers or posters.

Nearly all of these contributions are collected in these Proceedings. Within each of the nine topical sections, reviews and contributed papers are presented in the order given at the Symposium, and related poster papers follow in alphabetical order.

The selection of topics and talks for the Symposium was largely driven by recent advances in observation and modeling. In outline, the general order of presentation followed the title of the Symposium in moving from redshifts  $z \sim 0$  out to the high redshift Universe. After a series of introductory talks reviewing galactic interactions (here collected in § 1), the first few sessions were largely devoted to evidence of interactions in the Local Group (§ 2), ongoing tidal interactions in well-studied galaxies (§ 3), and mergers both ancient and recent involving nearby galaxies (§ 4). Subsequent sessions began looking toward higher redshifts, examining how interactions and mergers trigger starbursts (§ 5) and active galactic nuclei (§ 6). Large-scale structure and environmental effects in groups and clusters were incorporated next (§ 7). Finally, studies of galaxy evolution and deep-field surveys (§ 8) bridged the entire redshift range available to observations.

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