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M82 as viewed by Chandra in X-rays (blue), HST in H α (orange) and visual continuum (green), and by Spitzer (red).

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Preface

IAU Symposium 284 “The Spectral Energy Distribution of Galaxies” was held in Preston (UK), between 5th and 9th of September 2011. Jointly organised by the University of Central Lancashire (Preston) and the Max-Planck Institut für Kernphysik (Heidelberg), the symposium was attended by participants from 33 different countries from Europe, North America, South America, Asia, Africa and Australia/Oceania, with a balanced representation between professors, senior scientists and young career scientists, postdoctoral fellows and PhD students.

The symposium brought together developers and users of self-consistent physical or semi-empirical models for the emergent panchromatic spectral energy distributions (SEDs) of galaxies ranging over the complete accessible spectral range from gamma-rays to radio. Motivated by the rapid development in the corresponding observational capabilities in the last decade, the main goal of the symposium was to provide a forum for the interaction of modellers with both observers assembling multiwavelength datasets on galaxies and theoreticians considering fundamental physical processes in galaxies.

The program was fashioned to reflect the interconnections between the very broad range of physical processes responsible for the panchromatic photon output of galaxies. This embraced the formation, evolution and emission of stars; accretion-driven sources of photons; the chemical and physical properties of the interstellar medium, including both the gaseous and solid-state components and their interactions with ambient photon fields; and high energy processes involving cosmic rays. On the last day a final session was dedicated to models for the evolution of the panchromatic SEDs of galaxies over cosmological time, thus linking the detailed physical processes in individual galaxies discussed earlier in the week with the photon output of the Universe.

All of these topics have, of course, been the subjects of many dedicated individual symposia in the past, attended largely by their own specialized communities. However, IAU symposium 284 was unique in its concept of connecting the topics and bringing together the communities (or at least making a significant step towards achieving this). A particular challenge of this concept was to avoid the symposium becoming a sequence of self-contained mini-workshops or tutorials on each of the constituent topics, addressing selected topical issues directed at, and attended by, one particular community. However, in this respect any prior concerns proved to be completely unfounded. All the delegates, representing a mix of theoreticians, observers, and specialists in the many technical and astrophysical subfields needed to build SED models, proved to be enthusiastic and proactive participants throughout the week, generating many perceptive, and sometimes unexpected interdisciplinary discussions following both the oral presentations (many of these discussions could be documented for inclusion in the proceedings) and in the poster sessions. There were no parallel sessions.

In general, the intellectual atmosphere was open and constructive, with several known examples of new collaborations arising from discussions initiated at the symposium. For this, particular thanks must go to the authors for their careful preparation of the presentations. These were generally well directed to the broad audience, while very effectively answering the call for papers to highlight techniques and results combining measurements made from across the electromagnetic spectrum. Indeed, this response to the symposium confirms the genuine need and demand for more effective quantitative analysis techniques to exploit the already copious amounts of multiwavelength data now available for galaxies near and far.

Cristina C. Popescu and Richard J. Tuffs

May, 2012

Acknowledgements

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For the general public in Lancashire the days of the IAU Symposium were highlighted by the fascinating public talk given by the JHI/UCLan professor Don Kurtz on “The Beauty of Galaxies: from the Milky Way to the Beginning of Time”. We could not have been more proud of having such a distinguished speaker contributing to the other activities organised with the occasion of the IAU Symposium.

Our conference benefited from the generous financial support of the Great Britain Sasakawa (GBSF) foundation, which was used to support Japanese participants to attend the IAU Symposium. There is no doubt that the substantial numbers of Japanese astrophysicists attending the symposium would not have been possible without the Sasakawa grants. This, in turn, added significant value to the symposium, and, reciprocally, we believe, contributed to the propagation of the impressive results presented by our Japanese colleagues to the world wide community working in the field.

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