

Editorial: “Frontiers in Astrophysics”

— A special issue dedicated to the IAU XXVIIIth General Assembly (Beijing, 20–31 August, 2012)

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Abstract This special issue consists of 12 invited reviews on the frontier areas of astronomy and astrophysics, and is aimed at a timely, in-depth evaluation of the current status and key progress, with suggestions for future directions. This special issue is particularly dedicated to the IAU XXVIIIth General Assembly (GA) and is complementary to the IAU GA Invited Discourses during the conference.

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Astronomy is a rich and flourishing science with a broad range of frontier fields. Unexpected discoveries, new windows on the universe, and creative ideas make it full of beauty and passion. Astronomy nowadays remains vigorous in driving the evolution of science, and the thoughts of humanity. The tenet of the International Astronomical Union (IAU), “To promote and safeguard the science of astronomy in all aspects through international cooperation,” makes each of the IAU General Assemblies a great festival for astronomers in celebrating scientific progress, evaluating the current status and identifying new perspectives on frontier studies, and for planning their future efforts and collaborations.

Within the framework of the IAU XXVIIIth General Assembly (GA) held for the first time in China, the Local Organizing Committee (LOC) has endeavored to publish a special issue of the journal “Research in Astronomy and Astrophysics” (RAA). This special issue, entitled *Frontiers in Astrophysics*, includes 12 top reviews on major research problems, by 26 authors representing 9 countries. As can be seen from the Table of Contents, these reviews span almost every field in astronomy and astrophysics, from the Sun to planets, from galaxies to large-scale structures, from high energies to gravitation, etc. We are very grateful to all the authors who kindly agreed to contribute to the frontiers of their subjects and guide us towards future visions in this exhilarating science.

Initiated by the LOC, this project has received enthusiastic support from the IAU Executive Committee, and is seen as complementary to the GA Invited Discourses that will be published in

“Highlights of Astronomy.” The LOC hopes that these reviews will also greatly promote the relevant studies and help younger colleagues and Ph.D. students gain a better understanding of this science, and encourage colleagues to initiate their future efforts in important working directions. Thanks to the National Astronomical Observatories of Chinese Academy of Sciences and IOP Publishing, free copies of the special issue can be distributed to the GA participants, and open access to the whole astronomical community is available on the IOP RAA website <http://www.iop.org/journals/raa> and in ADS, as well as on the journal’s homepage at National Astronomical Observatories of Chinese Academy of Sciences <http://www.raa-journal.org>. We thank Academicians Shuhua Ye and Jiansheng Chen for their help in suggesting the topics of the invited reviews. We acknowledge the decisive contribution of Jingxiu Wang in initiating this effort, and the role of the RAA editorial staff for their nice, hard work.

We wish all participants a very fruitful IAU GA in Beijing, and, for colleagues who could not be present, a very fruitful reading of this special issue.