

COMMISSION 33

STRUCTURE AND DYNAMICS OF THE GALACTIC SYSTEM

*STRUCTURE ET DYNAMIQUE DU
SYSTÈME GALACTIQUE*

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TRIENNIAL REPORT 2009-2012

1. Introduction

Research on the structure and dynamics of the Galactic System covers a large dynamic range of spatial scales and timescales and investigates the evolution of gas, stars and dark matter. Much recent activity, not just in Europe, has focused on preparing for the data from the upcoming ESA astrometric mission Gaia, scheduled for launch in 2013. Several ongoing (plus planned) wide-area ground-based surveys, both spectroscopic and photometric, are providing the necessary very large datasets for robust determination of the joint position-chemical-kinematic distribution functions of Galactic stellar populations. The time domain adds another dimension, the goal of ongoing and future massive photometric surveys (e.g. LSST). The dynamical evolution of disks has been the focus of much recent theoretical research, stimulated by the possibility of radial migration of stars and gas under transient dynamical perturbations.

Recent discoveries of several satellite galaxies within the distance of the LMC perhaps argues for a broadening of the definition of the Galactic System. The increased capabilities of ever-more powerful computers has made feasible the detailed simulation of individual galaxies within a general cosmological framework, providing predictions for typical galaxies like the Milky Way. Very wide-ranging research is of relevance for the Galactic System. The overlap with the research undertaken by members of Division VIII is increasing.

In what follows, we list only the meetings of most direct relevance to the Galactic System (see also <http://www2.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/meetings/>) and give a brief summary of publication statistics.

2. Past Meetings

- The Galactic Bulge, August 22 - September 11, 2011, Aspen, USA
- Assembling the Puzzle of the Milky Way, April 17 - 22, 2011, Le Grand-Bornand, France

- RR Lyrae Stars, Metal-Poor Stars and the Galaxy, January 23 - 25, 2011, Carnegie Observatories, Pasadena, USA
- Star Formation under Extreme Conditions: the Galactic Center Dec 6 - 9, 2010, Observatoire de Besançon, France
- Chemistry, Dynamics and Structure of the Milky Way : Summer School and Workshop on Galactic Studies with the LAMOST Surveys, July 5 - 23, 2010, Beijing, China
- IAU Symposium 271: Astrophysical Dynamics: From Stars to Galaxies, June 21 - 25, 2010, Nice, France
- Nordic-Baltic Astronomy Summer School on Star Formation in the Milky Way and Nearby Galaxies, June 8 - 18, 2009, Tuorla Observatory, Turku, Finland
- Gaia: At the Frontiers of Astrometry, June 7 - 11, 2010, Paris, France
- The Dynamic ISM: a celebration of the Canadian Galactic Plane Survey, June 6 - 10, 2010, Naramata, Canada
- The Sixth Harvard-Smithsonian Conference on Theoretical Astrophysics, Sponsored by Raymond and Beverly Sackler: Dynamics from the Galactic Center to the Milky Way Halo, May 10 - 13, 2010, Cambridge, USA
- Stellar Populations in the Cosmological Context, May 3 - 6, 2010, Baltimore, USA
- Galactic Center Workshop 2009 : The Galactic Center: A Window to the Nuclear Environment of Disk Galaxies Oct 19 - 23, 2009, Shanghai, China
- B.V. Kukarkin Centenary Conference: Variable Stars, the Galactic Halo and Galaxy Formation, Oct 12 - 16, 2009, Zvenigorod (Moscow Region), Russia
- The Milky Way and the Local Group - Now and in the Gaia Era, Aug 31 - Sep 4, 2009, Heidelberg, Germany
- The Galactic Plane, in Depth and Across the Spectrum (IAU Special Session 8), Aug 11 - 14, 2009, Rio de Janeiro, Brazil

3. Upcoming Meetings

- A Workshop on the Emerging, Multi-wavelength View of the Galactic Centre Environment, Oct 17 - 20, 2011, Heidelberg Convention Center, Heidelberg, Germany
- The 3rd Subaru International Conference: The First NAOJ Symposium, Galactic Archaeology, Nov 1 - 4, 2011, Shuzenji, Japan
- A Window to the Formation of the Milky Way, May 20 - June 9, 2012, Aspen, USA
- International Astronomical Union General Assembly, August 20 - 31, 2012, Beijing, China

4. Publications

As noted above, the research into the Milky Way overlaps that of other commissions. Use of the key words 'Milky Way', in the abstract field of the SAO/NASA Astrophysical Data Service interface, results in 1,087 papers published in refereed journals in the period from January 2009 to September 2011.

Reviews related to the Galactic System that appeared in the SAO/NASA Astrophysical Data Service from 2009 to September 2011 include:

- Soderblom, D.R., 'The Ages of Stars', 2010, *ARA&A*, 48, 581
- Bastian, N., Covey, K.R., & Meyer, M.R., 'A Universal Stellar Initial Mass Function? A Critical Look at Variations', 2010, *ARA&A*, 48, 339
- van der Kruit, P. & Freeman, K.C., 'Galaxy Disks', 2011, *ARA&A*, 49, 301

- Several reviews in the proceedings of ‘The Galaxy Disk in Cosmological Context’, IAU Symposium, Volume 254. Edited by J. Andersen, J. Bland-Hawthorn and B. Nordström

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