

## COMMISSION 37

## STAR CLUSTERS AND ASSOCIATIONS

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### 1. Introduction

Research on star clusters and associations includes the observation and theory of stellar groupings as they form and evolve, cluster disruption, stellar interactions inside clusters, and star formation in dense environments. In what follows, we list past, present and future meetings (<http://www2.cadc-ccda.hia-ihp.nrc-cnrc.gc.ca/meetings/>), publications statistics and important surveys, reviews, and databases about clusters.

### 2. Past Meetings

- 6th IRAM 30m Summer School, Star formation - Near and Far, September 23 - 30, 2011, Pradollano, Sierra Nevada, Spain
- From Star Clusters to Galaxy Formation - The Virtual Universe, September 20 - 23, 2011, University of Heidelberg, Germany
- Recent Advances in Star Formation : Observations and Theory (Part of the Silver Jubilee celebration of the Vainu Bappu Telescope), June 28 - July 1, 2011, Indian Institute of Astrophysics, Bangalore, India
- Star Formation Summer School, June 15 - 18, 2011, Academia Sinica Institute of Astronomy and Astrophysics, Taiwan
- Stellar Clusters and Associations, May 23 - 27, 2011 Granada, Spain
- Dynamics of Low-Mass Stellar Systems : From Star Clusters to Dwarf Galaxies, April 4 - 8, 2011, Santiago, Chile
- Star Formation under Extreme Conditions: the Galactic Center, December 6 - 9, 2010, Observatoire de Besançon, France
- 4th East Asian Numerical Astrophysics Meeting, November 2 - 5, 2010, Academia Sinica Institute of Astronomy and Astrophysics, Taiwan
- MODEST-10: Encounters and interactions in dense stellar systems - modeling, computing, and observations, August 30 - September 3, 2010, National Astronomical Observatories - Chinese Academy of Sciences (NAOC) and The Kavli Institute for Astronomy and Astrophysics at Peking University (KIAA), China
- IAU Symposium 271: Astrophysical Dynamics: From Stars to Galaxies, June 21 - 25, 2010, Nice, France
- UP: Have Observations Revealed a Variable Upper End of the Initial Mass Function?, June 21 - 25 2010, Sedona, Arizona, USA

- IAU Symposium 270: Computational Star Formation, May 31 - June 4, 2010, Barcelona, Spain
- Infrared Emission, Interstellar Medium and Star Formation, February 22 - 24, 2010, MPI for Astronomy, Heidelberg, Germany
- International Workshop Double and Multiple Stars: Dynamics, Physics, and Instrumentation, December 10 - 11, 2009, Astronomical Observatory Ramon Maria Aller, Santiago de Compostela, Spain
- IAU Symposium 266: Star Clusters - Basic Galactic Building Blocks Throughout Time And Space, August 10 - 14, 2009, IAU General Assembly, Rio de Janeiro, Brazil
- Nordic-Baltic Astronomy Summer School on Star Formation in the Milky Way and Nearby Galaxies, June 8 - 18, 2009, Tuorla Observatory, Turku, Finland
- Constellation EU RTN School on X-rays from Star Forming Regions, May 18 - 22, 2009, INAF-Oss. Astronomico di Palermo, Palermo, Italy
- TIARA Winter School on Star Formation, February 5 - 10, 2009, National Tsing Hua University, Hsinchu, Taiwan
- Formation and Evolution of Globular Clusters, January 12 - 16, 2009, Kavli Institute for Theoretical Physics, UC Santa Barbara, USA

### 3. Upcoming Meetings

- Protostars and Planets VI, 15 July 15 - 20, 2013, Heidelberg Convention Center, Heidelberg, Germany
- International Astronomical Union General Assembly, August 20 - 31, 2012, Beijing, China
- EPoS 2012 The Early Phase of Star Formation - Assembling Pieces of the Missing Paradigm, July 1 - 6, 2012, Max-Planck-Society Conference Center Ringberg Castle, Tegernsee, Germany
- Stellar Populations 55 years after the Vatican Conference, at the European Week of Astronomy and Space Science, July 2 - 6, 2012, Rome, Italy
- The Labyrinth of Star Formation, June 18 - 22, 2012, Crete, Greece
- From Atoms to Pebbles: Herschel's View of Star and Planet Formation, March 20 - 23, 2012, Grenoble, France

### 4. Publications

The topic of star clusters and associations continues to be one of the most widely followed in all of astronomy. It spans the range of interest from stellar properties, to stellar clusters, to star formation and evolution, the IMF, with considerable overlap in other commissions.

**Publications** in Refereed Journals (AN, AJ, A&A, ApJ, ApJS, BASI, JRASC, MNRAS, PASP, PASA, PASJ, ...) in the period from January 2009 to September 2011 tally as follows (from SAO/NASA Astrophysical Data Service):

- Globular Clusters: ~ 700 papers
- Open Clusters: ~ 600 papers
- Stellar Associations: ~ 150 papers

Some of the issues addressed in these publications are:

- the formation and dynamical evolution of star clusters
- stellar evolution and ages
- star clusters as tracers of stellar populations

- studies of specific types of objects within clusters
- nuclear clusters
- extragalactic cluster systems

The authors utilize observations covering an increasing portion of the electromagnetic spectrum, ranging from X-rays to the far-infrared, as well as advanced N-body simulations.

A newsletter with cluster results, SCYON, is edited by H. Baumgardt and E. Paunzen: <http://www.univie.ac.at/scyon/>

**Reviews** related to star clusters that appeared in the SAO/NASA Astrophysical Data Service from 2009 to September 2011 are:

- 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
- de Grijs, R. (ed.), *Star clusters as tracers of galactic star-formation histories*, 2010, Phil. Trans. R. Soc. A 368
- Heber, U., *Hot Subdwarf Stars*, 2009, ARA&A, 47, 211
- Portegies Zwart, S.F., McMillan, S.L.W., & Gieles, M., *Young Massive Star Clusters*, 2010, ARA&A, 48, 431

Additional reviews regarding a variety of aspects of star cluster research have also appeared in the proceedings of the conferences and meetings mentioned earlier.

## 5. Databases

- Data on Open Clusters in the Milky Way and the Magellanic Clouds can be found in the WEBDA site (<http://www.univie.ac.at/webda/>), which was originally developed by Jean-Claude Mermilliod from the Laboratory of Astrophysics of the EPFL (Switzerland) and is now maintained and updated by Ernst Paunzen and Christian Stütz from the Institute of Astronomy of the University of Vienna (Austria).

- Data on Galactic Globular Clusters can be found in the “Catalog of Milky Way Globular Cluster Parameters” by W.E. Harris (<http://www.physics.mcmaster.ca/Globular>), as well as in “The Galactic Globular Clusters Database” at Astronomical Observatory of Rome INAF-OAR: (<http://gclusters.altervista.org/>).

- A Catalogue of Variable Stars in Globular Clusters is maintained by Christine Clement at <http://www.astro.utoronto.ca/~cclement/read.html>.

- A Catalog of “Open Clusters and Galactic Structure,” by W.S. Dias, *et al.* (2002 A&A 389 871), which also contains references to other catalogs, is here: <http://www.astro.iag.usp.br/~wilton/>.

- A Hubble Space Telescope ACS survey of 66 Galactic Globular Clusters by Sarajedini *et al.* (2007, AJ, 133, 1658) is here: [http://www.astro.ufl.edu/~ata/public\\_hstgc/](http://www.astro.ufl.edu/~ata/public_hstgc/).

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