

# Programme

IAU Symposium

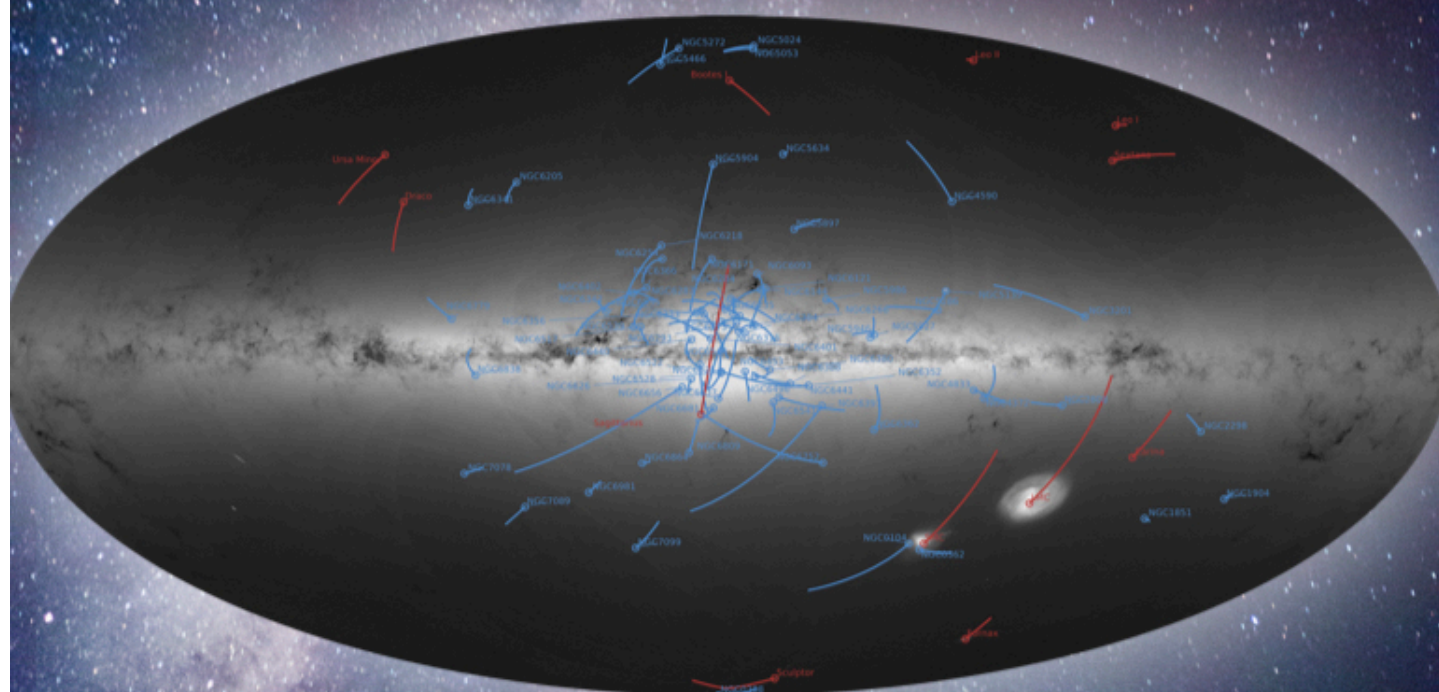
**351**

MODEST-19

Bologna

May 27-31, 2019

## Star Clusters: From the Milky Way to the Early Universe



Sala Plenaria  
Centro Congressi

Area della Ricerca del CNR di Bologna

INAF



ISTITUTO NAZIONALE DI ASTROFISICA  
OSSERVATORIO DI ASTROFISICA E SCIENZA DELLO SPAZIO DI BOLOGNA



## **MONDAY:**

*Chair: A. Sills*

8:30-9:30 **Check-in at the Welcome Desk**

9:30-10:00 **Welcome**

10:00-10:35 **William Harris** - Extragalactic young and old globular cluster systems

10:35-10:50 **Duncan Forbes** - Insights from Globular Clusters: Dwarfs to Giant Galaxies

10:50-11:05 **Zara Randriamanakoto** - Young massive clusters in the interacting LIRG Arp 299

11:05-11:35 **coffee break**

11:35-12:00 **Charli Sakari** - Integrated spectroscopy of extragalactic globular clusters

12:00-12:15 **Alejandra Recio-Blanco** - The oldest Milky Way accreted population revealed by a chemo-dynamical decryption key of globular clusters

12:15-13:00 **1-min poster presentations**

13:00-14:30 **lunch**

*Chair: G. Parmentier*

14:30-14:45 **Eugene Vasiliev** - Using Gaia for studying Milky Way star clusters

14:45-15:10 **Ana Bonaca** - Uncovering the nature of dark matter with stellar streams in the Milky Way

15:10-15:25 **Andres Piatti** - Two kinematically different Large Magellanic Cloud old globular cluster populations unveiled from Gaia DR2 data sets

15:25-16:00 **1-min poster presentations**

16:00-16:30 **coffee break**

16:30-16:45 **Andrea Dupree** - Spectroscopy of LMC Cluster Stars

16:45-17:20 **Pascale Jablonka** - Dwarf galaxies: formation and chemical evolution

17:20-17:35 **Pavel Kroupa** - A systematically varying stellar IMF from globular cluster and ultra-compact dwarf galaxy data and some implications thereof

17:35-17:50 **Melvyn Davies** - The Ecology of the Galactic Centre

## **TUESDAY:**

*Chair: W. Harris*

09:30-9:55 **Florent Renaud** - Formation and evolution of globular clusters and globular cluster systems

09:55-10:20 **Hui Li** - Formation and evolution of Globular Clusters in Cosmological Simulations

10:20-10:35 **Marta Reina-Campos** - Dynamical evolution of stellar clusters in E-MOSAICS

10:35-11:15 **coffee break**

11:15-11:30 **Mike Fall** - Formation, Evolution, and Disruption of Star Clusters: A Synoptic Theory

11:30-12:05 **Anil Seth** - Nuclear Star Clusters

12:05-12:20 **Karina Voggel** - Using surviving nuclear star clusters and their hidden SMBHs as new tracers of galaxy assembly and SMBH formation

12:20-13:50 **lunch**

*Chair: Y.-W. Lee*

13:50-14:05 **Mayte Alfaro Cuello** - A deep view into the nucleus of the Sagittarius dwarf spheroidal galaxy: M54

14:05-14:40 **Simon Portegies Zwart** - Young massive clusters in the Milky Way and beyond

14:40-14:55 **Eros Vanzella** - Unveiling forming star clusters in the young universe

14:55-15:10 **Michael Grudic** - Connecting the ISM to Star Cluster Populations Across Cosmic Time

15:10-15:25 **Alison Sills** - Formation of Globular Clusters in Radiation Hydrodynamics Simulations

15:25-15:40 **Hosein Haghi** - The dissolution rate of star clusters starting with a top-heavy IMF

15:40-16:10 **coffee break**

16:10-16:25 **Susanne Pfalzner** - Observations meets theory in clustered star formation

16:25-16:40 **Michiko Fujii** - Inter-cluster velocity structure of star cluster complexes

16:40-16:55 **Tereza Jerabkova** - Multiple bursts of star formation in young star clusters: The case of the Orion Nebula Cluster

16:55-17:10 **Janet Drew** - Tracing O-star runaways from the massive young clusters, NGC 3603 and Westerlund 2

17:10-17:45 **Else Starkenburg** - Galactic Archaeology

## **WEDNESDAY:**

*Chair: G. Da Costa*

9:30-10:05 **Antonino Milone** - Photometric studies of multiple stellar populations in Galactic globular clusters and in the young and intermediate-age massive clusters in the Magellanic Clouds

10:05-10:40 **Raffaele G. Gratton** - Spectroscopic studies of stellar populations in globular clusters and field stars: implications for globular cluster and MW halo formation

10:40-11:15 **coffee break**

11:15-11:35 **Anna F. Marino** - Spectroscopic observations of Multiple Stellar Populations in Star Clusters

11:35-11:50 **Francesca D'Antona** - "Status update" for the AGB scenario for multiple populations in Globular Clusters

11:50-12:05 **Young-Wook Lee** - Multiple populations in globular clusters: New insights from chemical evolution & horizontal-branch models

12:05-12:20 **Christian Johnson** - Light Element Discontinuities in the Globular Cluster NGC 6402 (M14)

12:20-12:35 **Chul Chung** - Globular Cluster – Bulge Connection: Population Synthesis models with Multiple Populations

12:35-13:35 **lunch**

*Chair: A. Bragaglia*

13:35-13:50 **Francesco Calura** - Hydrodynamic simulations of second generation star formation in a young globular cluster

13:50-14:05 **Mattia Libralato** - Internal kinematics of multiple stellar populations in globular clusters: current state of the art, issues, and a way out.

14:05-14:20 **Emanuele Dalessandro** - Unexpected kinematics of multiple populations in globular clusters

14:20-14:35 **Enrico Vesperini** - Dynamical Evolution of Multiple-Population Globular Clusters

14:35-15:05 **coffee break & poster viewing**

15:05-15:20 **Corinne Charbonnel** - Formation of multiple stellar populations in globular clusters - Reviewing the nucleosynthesis and the dynamical constraints

15:20-15:35 **Mark Gieles** - Supermassive stars as the origin of multiple populations in globular clusters

15:35-15:50 **Silvia Martocchia** - Age as a Major Factor in the Onset of Multiple Populations in Stellar Clusters

15:50-16:05 **Steve Zepf** - Evidence for Ubiquity of Multiple Populations from Far-Ultraviolet Observations of Extragalactic GCs

16:05-16:20 **Paul Goudfroji** - The Impact of Multiple Populations in Globular Clusters to the UV Upturn and Element Abundance Ratios in Massive Early-Type Galaxies

16:20-16:35 **Soeren Larsen** - Chemical composition of globular clusters in dwarf galaxies

## **THURSDAY:**

*Chair: M. Davies*

- 9:30-9:45 **Long Wang** - The strong impact of IMFs on the survival of globular clusters  
9:45-10:00 **Alessandra Mastrobuono-Battisti** - The amazing life of a globular cluster: tidal interactions and mergers in the Galactic disc and nuclear star cluster  
10:00-10:15 **Mirek Giersz** - MOCCA-SURVEY Database I: Dissolution of tidally filling star clusters harboring BH subsystem  
10:15-10:40 **Anna Lisa Varri** - Phase space complexity of star clusters: fresh observables for old and new questions  
10:40-11:05 **Sebastian Kamann** - Black holes and rotation: Internal kinematics of star clusters with MUSE

11:05-11:35 **coffee break**

- 11:35-11:50 **Laura Watkins** - Imprints of Evolution on the Internal Kinematics of Globular Clusters  
11:50-12:05 **Paolo Bianchini** - Globular clusters in the era of precision astrometry  
12:05-12:20 **Maria Tioncco** - Kinematical Evolution of Globular Clusters  
12:20-12:35 **Antonio Sollima** - The eye of Gaia on globular cluster dynamics

12:35-13:45 **lunch**

*Chair: E. Vesperini*

- 13:45-14:10 **Davide Massari** - Gaia results for star clusters and dwarf galaxies in the Milky Way  
14:10-14:25 **Alice Zocchi** - Rotating globular clusters in the Gaia era  
14:25-15:00 **Fred Rasio [Presented by K.Kremer]** - The role of black holes in globular cluster dynamics and gravitational-wave source formation  
15:00-15:15 **David Pooley** - Neutron Star Merger Products in Galactic Globular Clusters  
15:15-15:30 **Sara Rastello** - Dynamical formation of binary black holes across cosmic time

15:30-16:00 **coffee break**

- 16:00-16:35 **Maureen van den Berg** - X-ray sources in Galactic star clusters  
16:35-16:50 **Abbas Askar** - Why Black Holes Matter in Globular Clusters: Dynamical Consequences and Observational Signatures  
16:50-17:25 **M. Ishigaki** - Chemical tagging with supernova yield models as a tool to link field stars to their birth clusters

**\*\*\*Conference dinner\*\*\***

**FRIDAY:**

*Chair: M. Giersz*

9:30-9:55 **Francesco Ferraro** - Exotic stellar populations, blue stragglers and cluster dynamics

9:55-10:10 **Claire Ye** - Millisecond Pulsars and Black Holes in Globular Clusters

10:10-10:25 **Ugo N. Di Carlo** - Young Star Clusters: a Nursery of Merging Binary Black Holes

10:25-10:40 **Holger Baumgardt** - On the presence of stellar-mass and intermediate mass black holes in globular clusters

10:40-11:20 **coffee break**

11:20-11:55 **David Yong** - Stellar populations in the Milky Way and their link with GCs

11:55-12:10 **Eduardo Balbinot** - Multiple stellar populations in the stellar stream GD1 using Gaia

12:10-12:25 **Peter Kuzma** - Searching Gaia for Extended Structure in Globular Clusters

12:25-13:45 **lunch**

*Chair: M. Fuji*

13:45-14:20 **V. Hill** - The innovation of large multi-element high-resolution spectroscopic surveys

14:20-14:35 **Ricardo Schiavon** - The Contribution of Globular Clusters and Dwarfs as Building Blocks of the Galactic Halo from APOGEE and Gaia

14:35-14:50 **David Nataf** - The Relationship Between Globular Cluster Parameters and Abundance Variations, and Application to Former Globular Cluster Stars in the Field

14:50-15:00 **Symposium wrap-up**

**coffee break and poster collection**