



Ministero
dell'Università
e della Ricerca



Cradle Of Life & Our Galaxy

Report from the SWG

Eleonora Bianchi

IN PARTNERSHIP WITH



The Fifth National Workshop on the SKA Project, Bologna 24-28 Nov. 2025



Cradle Of Life & Our Galaxy

Cradle of Life

Current co-Chairs :

Eleonora Bianchi (INAF, Italy)

Joe Callingham (ASTRON,
The Netherlands)

Our Galaxy

Current co-Chairs :

Marc Audard (University
of Geneva, Switzerland)






Ke Wang (Peking
University)

Previous chairs: Cherry Ng, John Ilee, Laurent Lamy,
Josep Miguel Girart, Izaskun Jimenez-Serra, Doug
Johnstone, Andrew Siemion, Di Li, Melvin Hoare

Previous chairs: Adriano Ingallinera, Jan Forbrich,
Grazia Umana, Erik Rosolowsky, Mark Thompson





SKAO Science liaison Tyler Bourke

Cradle Of Life

-  Understand Planet formation
-  Detect and characterize large molecules in planet-forming regions
-  Detect and characterize exoplanets
-  Search for ExtraTerrestrial Intelligence (SETI)
-  Understand our Solar System and its origin

Our Galaxy

The cycle of matter between the different components of the Milky Way

-  From the ISM to stars
-  Stars and their neighbourhoods
-  From stars to the ISM
-  The Galactic Center

> 200 members each



From the SWG

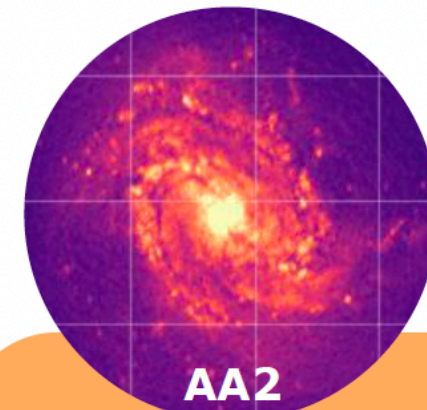
Science Meeting
16-20 June 2025

SKAO milestones

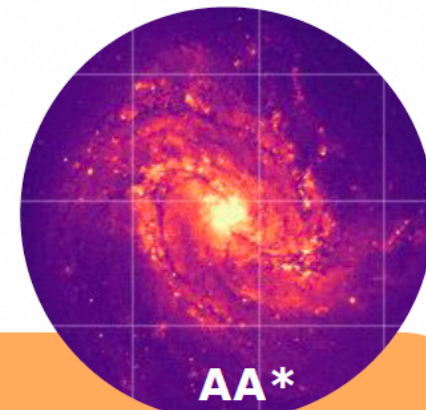


Call for SV
ideas ~ 6
months
before

Community involvement starts



AA2

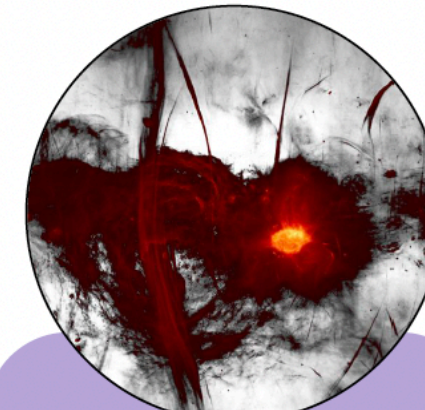


AA*

Science Verification

- A full dress rehearsal of the end-to-end system for every mode of operation
- Once modes and pipelines are working, the community can submit target ideas
- Data will be publicly available for scrutiny
- Build trust and fostering an early science return

Credit: I. Heywood, SARAO



Cycle 0

- Shared-risk PI projects
- SRCNet resources ready for user
- proprietary periods



Middle 2026

First half 2027

First half 2029

2030

Middle 2028

First half 2029

First half 2031

2032

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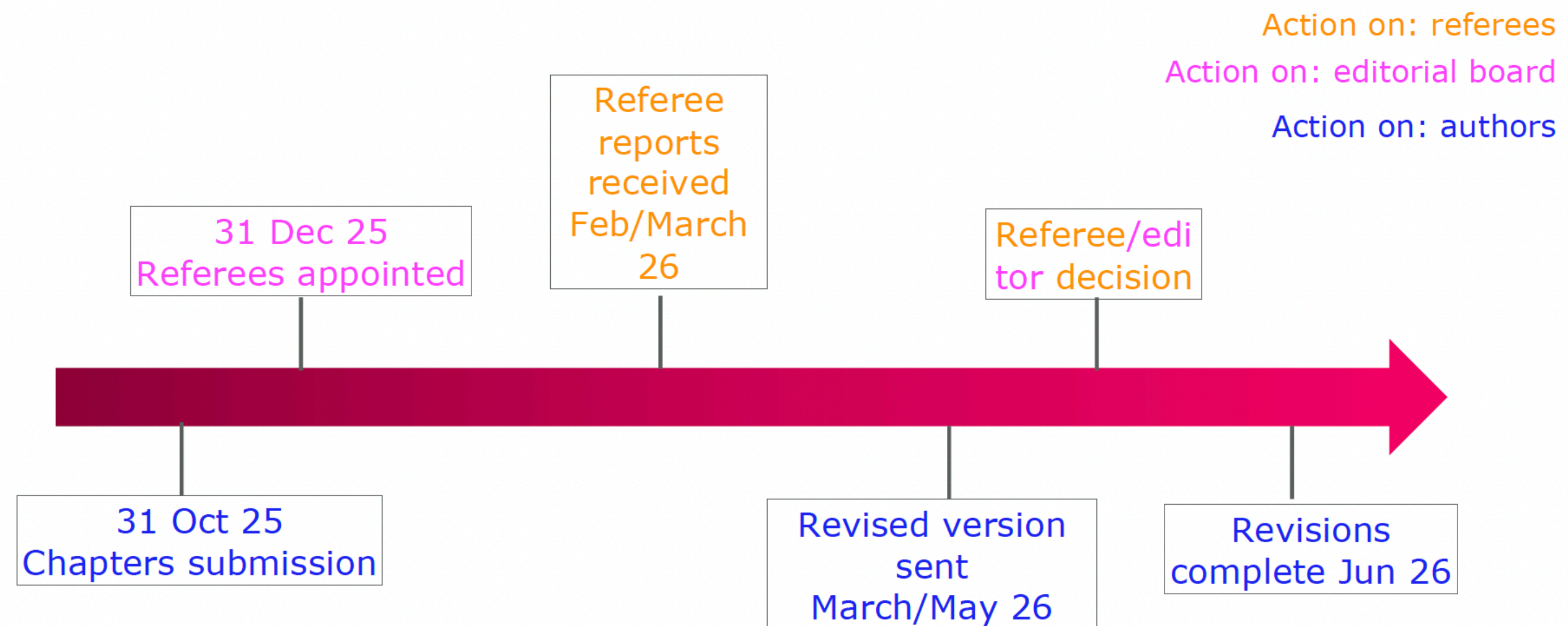
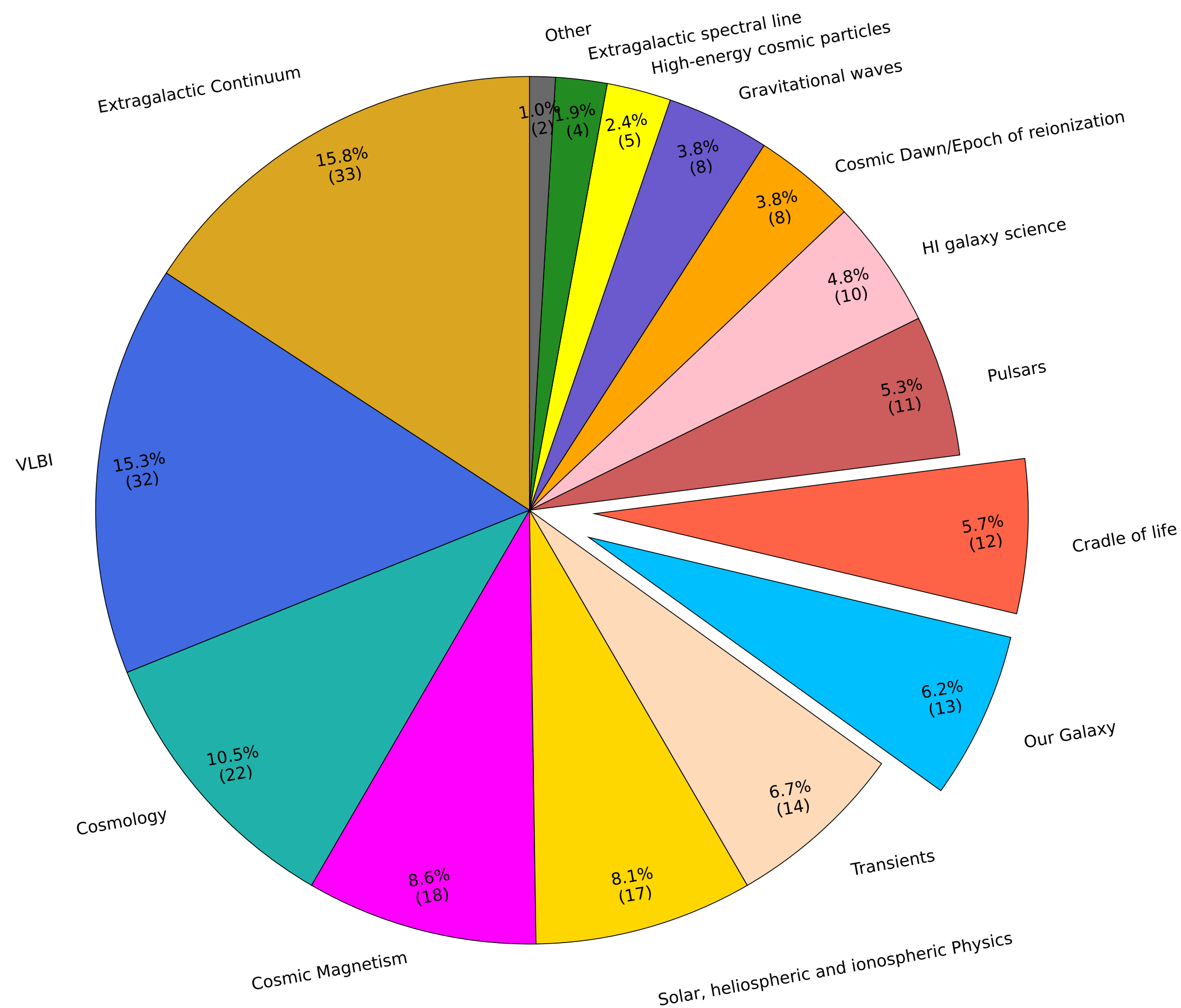




SKAO Science Book- Advancing Astrophysics II

Cradle of Life 12 Chapters
Our Galaxy 13 Chapters

Submissions by WG









SKAO Science Book-Advancing Astrophysics II

Cradle Of Life

- 1) Searching for Extraterrestrial Intelligence with the SKA, **Chenoa D Tremblay**
- 2) Demographics of planet-forming disks with the SKAO, **Antonio Garufi**
- 3) Substructures in Planet-Forming Disks with the SKAO, **Jess Speedie; Yinhao Wu**
- 4) Ionized gas emission in protoplanetary disks with the SKAO, **Greta Guidi**
- 5) Unveiling complex chemistry in planet-forming disks with the SKAO, **Linda Podio**
- 6) Jets and outflows in young stellar objects with the SKAO, **Giovanni Sabatini**
- 7) Chemical complexity in the early stages of star formation in the SKAO era, **Eleonora Bianchi**
- 8) Unveiling the Trans-Neptunian Region with the SKA, **Pablo Santos Sanz**
- 9) SKA-ALMA Synergies in Star Formation Science, **Jan Forbrich**
- 10) Discovering and characterising exoplanets and ultracool dwarfs with the Square Kilometre Array, **Rob Kavanagh**
- 11) Radio emission from star-planet interaction, **Harish Vedantham**
- 12) Pathfinder results for populations of planet-forming discs with SKAO, **Jane S Greaves**



Our Galaxy

- 1) Search for Seeds of The Cradle of Stars: Study of The Evolution From Atomic to Molecular Hydrogen Clouds with 1000 AU Scale Resolution, **Hiroaki Yamamoto**
- 2) The nearest galactic nucleus: Studying the Galactic Centre with SKA MID, **Rainer Schoedel**
- 3) Early phases of star formation with SKAO: synchrotron emission from dense starless cores in molecular clouds, **Andrea Bracco** 
- 4) Evolved massive stars and their impact on their environment, **Carla S. Buemi** 
- 5) The 10-15 GHz radio continuum survey of the Galactic Plane with SKAO, **Alessio Traficante** 
- 6) Probing Anomalous Microwave Emission with the Square Kilometre Array, **Matias Vidal**
- 7) Supernova remnants in the new radio astronomy era, **Adriano Ingallinera** 
- 8) Cosmic Rulers: Masers as Tools for Probing Structure in the Galaxy and Beyond, from au to kpc, **Kazi L. J. Rygl** 
- 9) Coherent and Incoherent Emission from the Ordered Magnetospheres of Low-Mass Stars, UCDs, and Massive Stars, **Francesco Cavallaro** 
- 10) Measuring Magnetic Field Strengths in Galactic Star-forming Regions via the Zeeman Effect with the SKA, **Tyler Burke**
- 11) Spectroscopic surveys with the SKA probing the ionised and molecular Milky Way, **Agata Karska**
- 12) The Physics of the Cold and Warm Interstellar Medium Through Radio Recombination Lines, **Pedro Salas**
- 13) The Impact and Environment of Massive Stars and Stellar Clusters, **D. Anish Roshi**



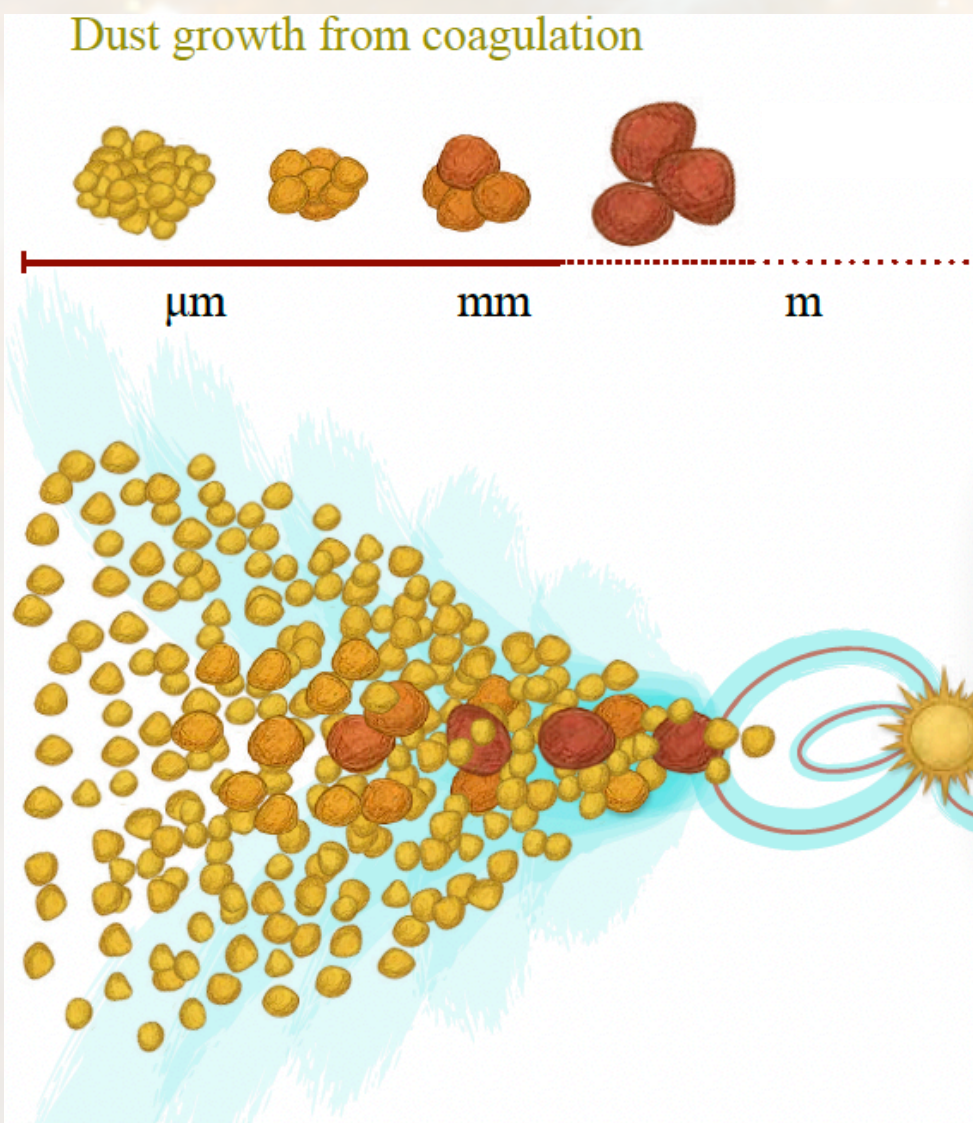
Cradle of Life

Science Working Group



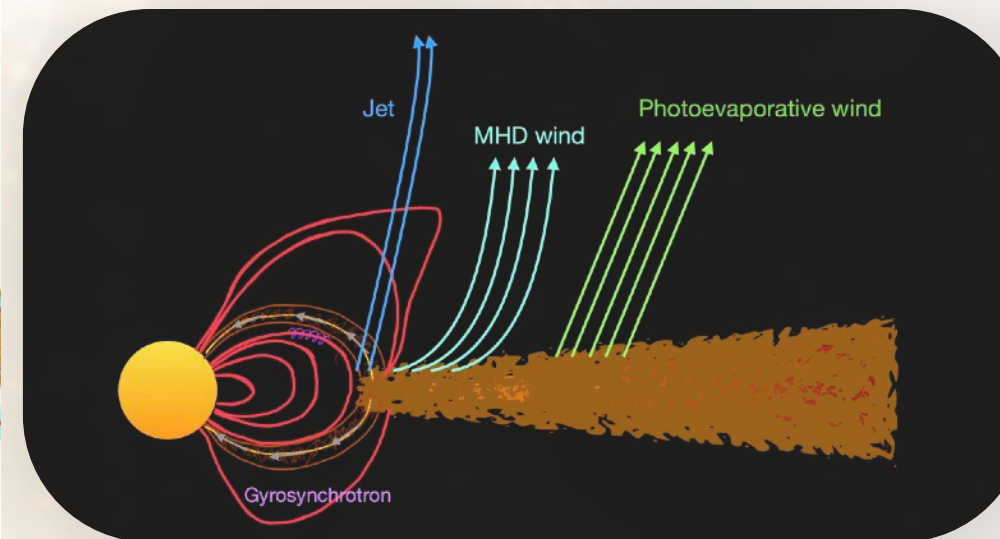
Science Highlights

Planet formation



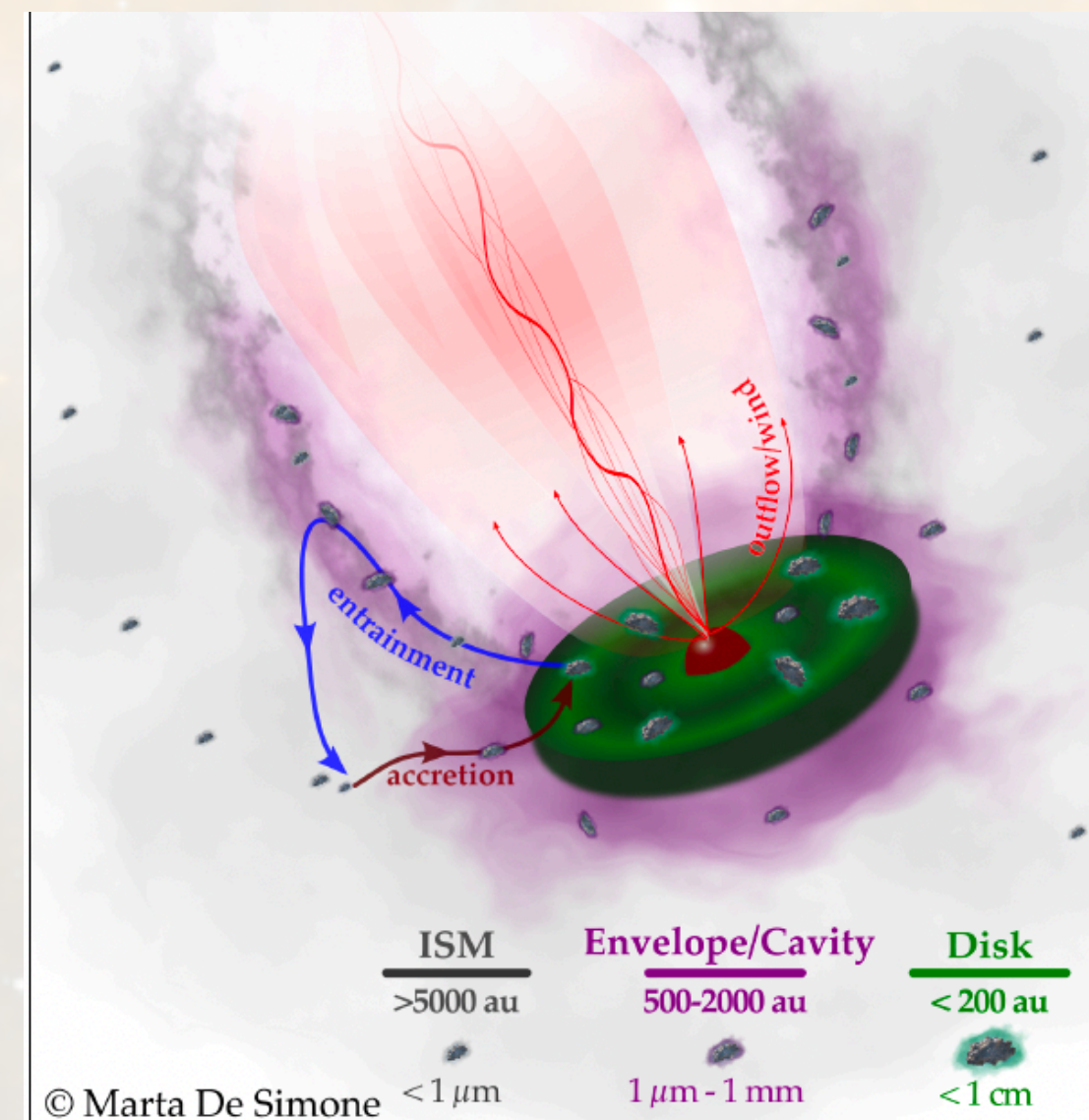
Talk by A. Garufi
Poster by M. Armante

Disk winds



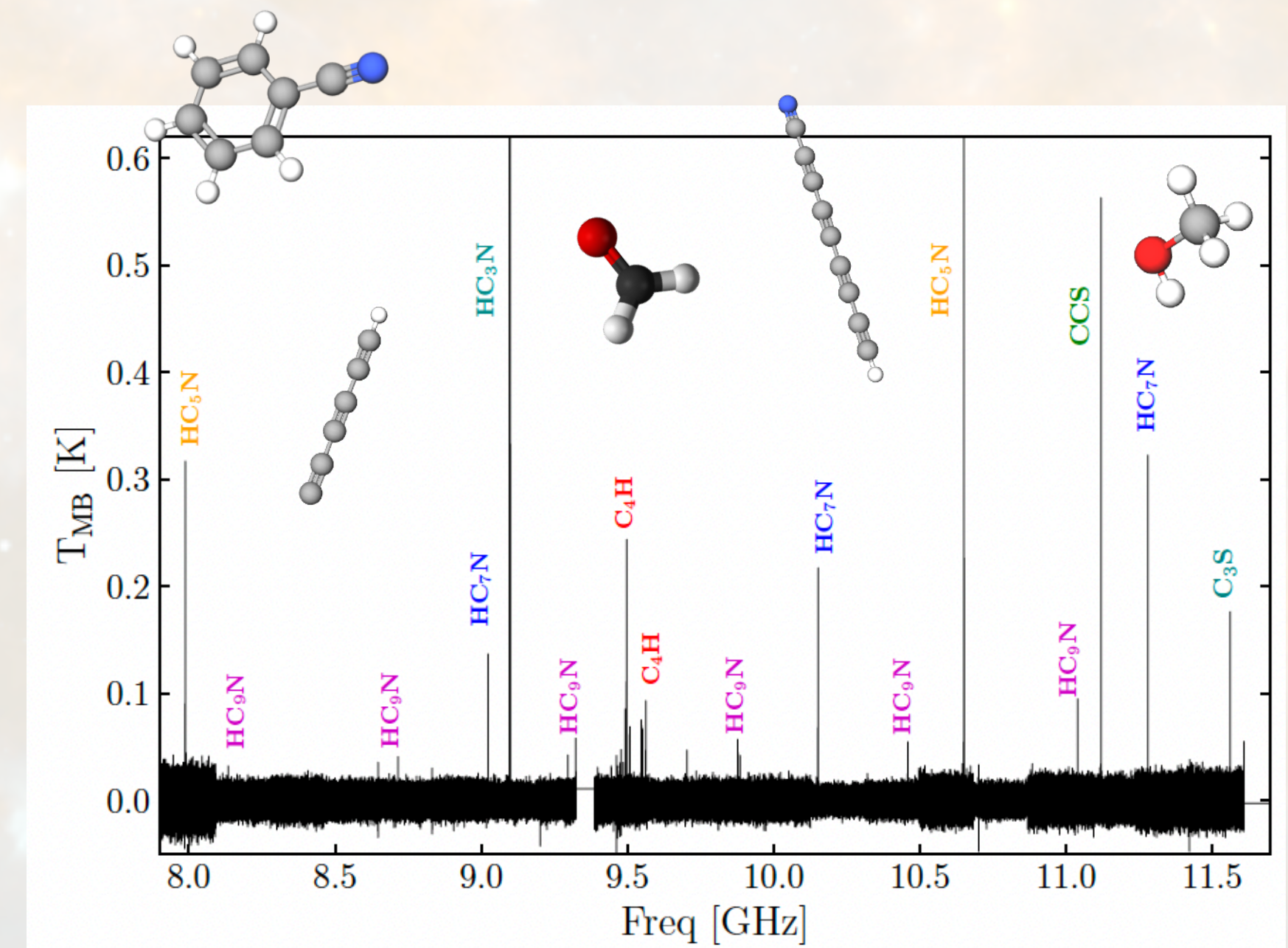
Poster by G. Guidi

Jets & Outflows



Talk by G. Sabatini

Chemical complexity



Talk by L. Podio & C. Codella
Poster by L. Giani

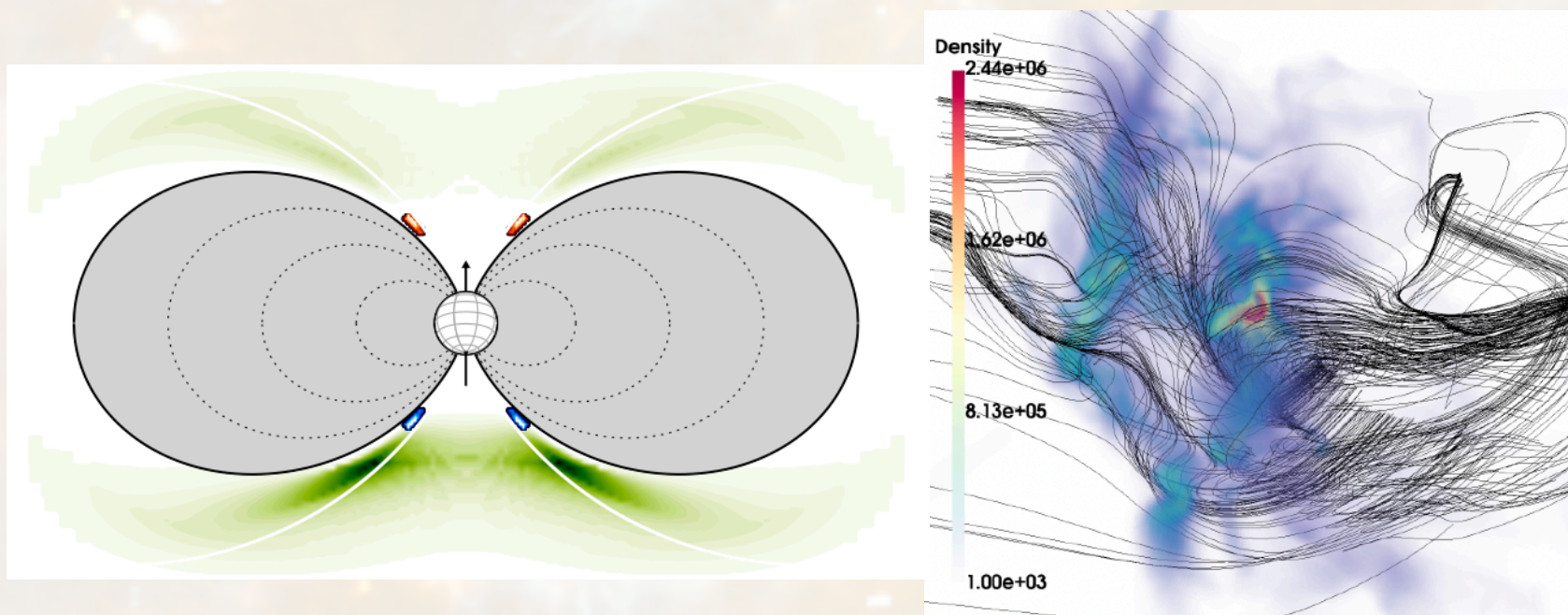


Our Galaxy Science Working Group



Science Highlights

Magnetic fields

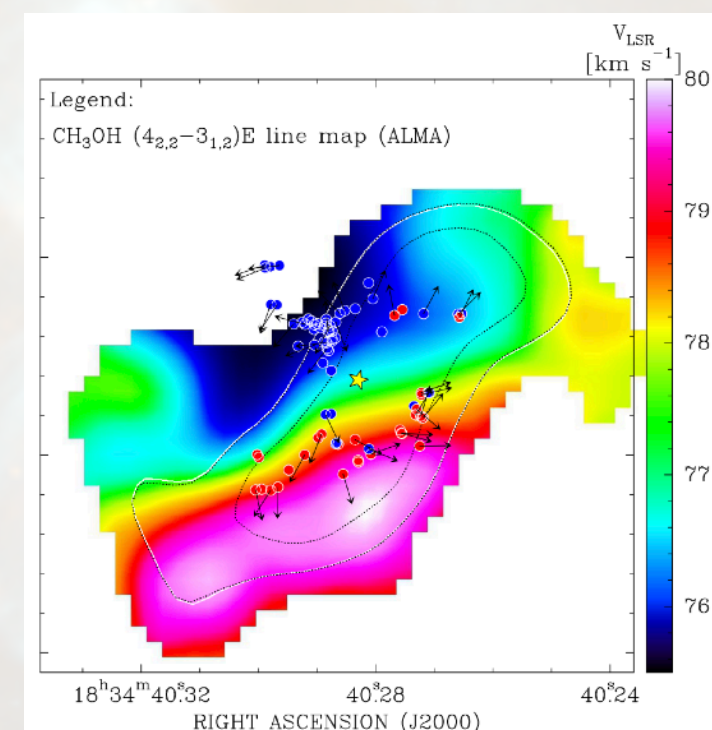


Talk by F. Cavallaro

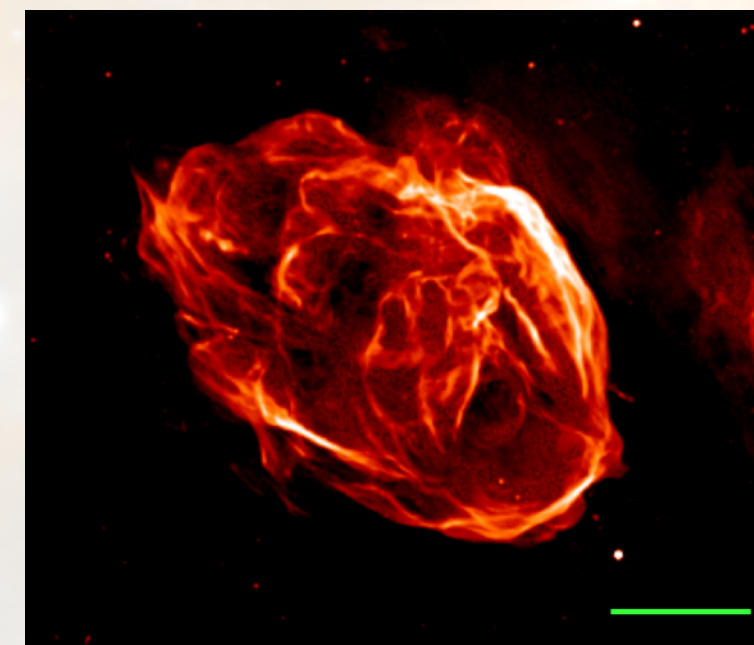
Talk by A. Bracco

Masers - cosmic rulers

Talk by K. Rygl

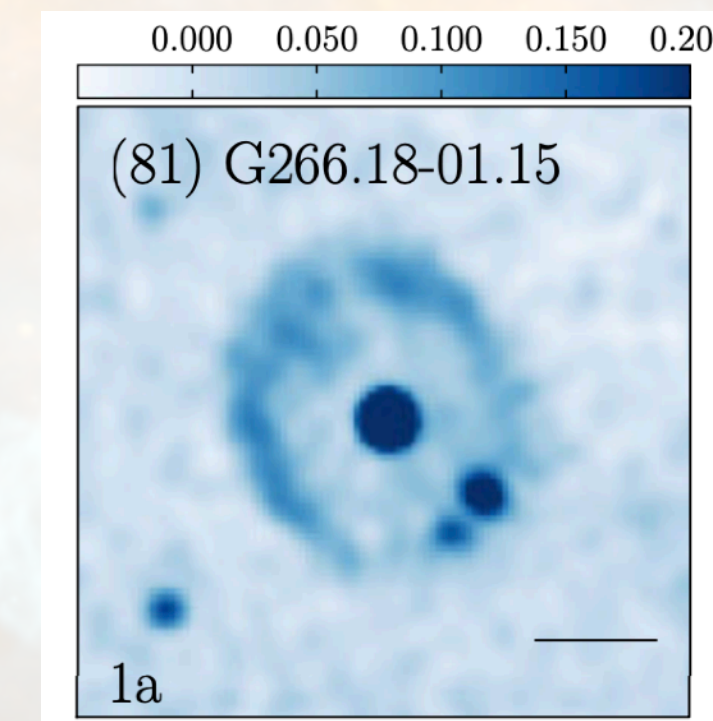


Supernova Remnants



Talk by S. Loru

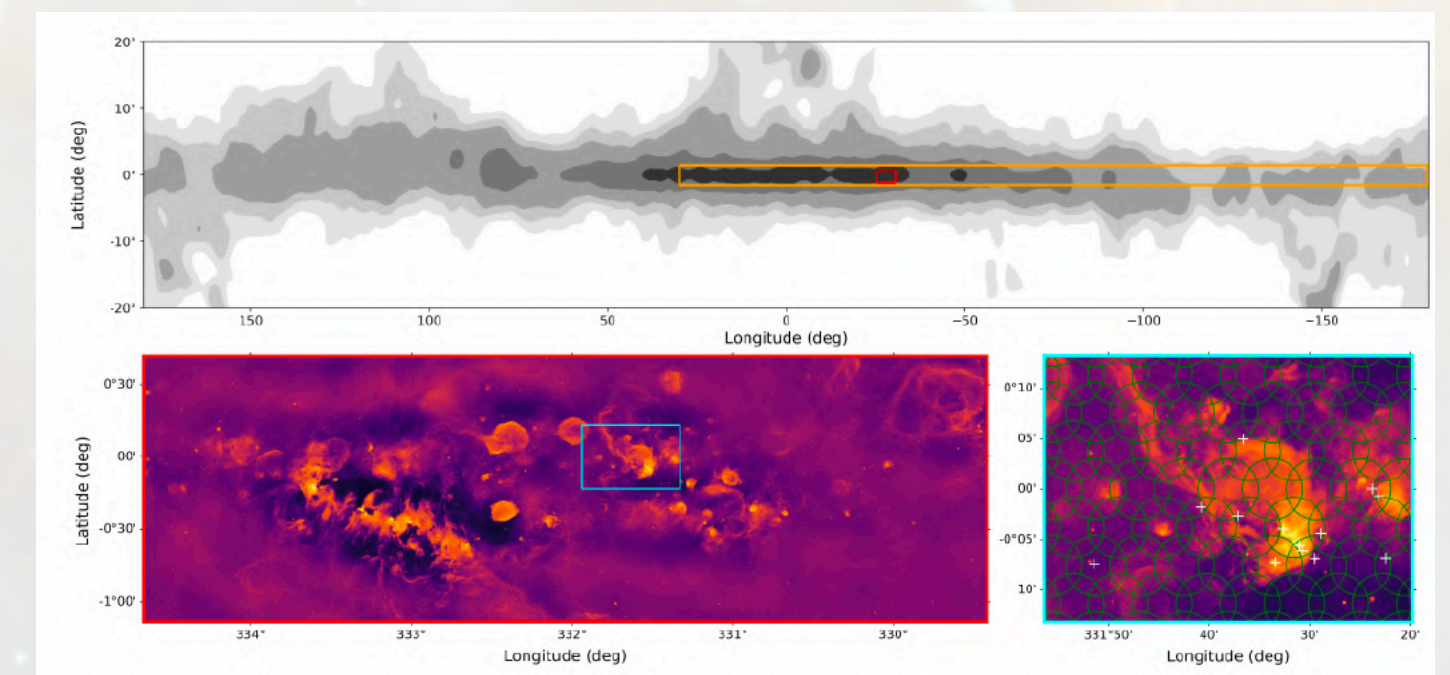
Radio Rings with MeerKAT



Talk by C. Bordiu

SKAO Galactic plane survey

Talk by C. Mininni





Thanks & Enjoy!