

LOFAR ERIC

Low Frequency Array European Research Infrastructure Consortium

Wim van Cappellen – Interim Director

Jacqueline Mout – Council chair

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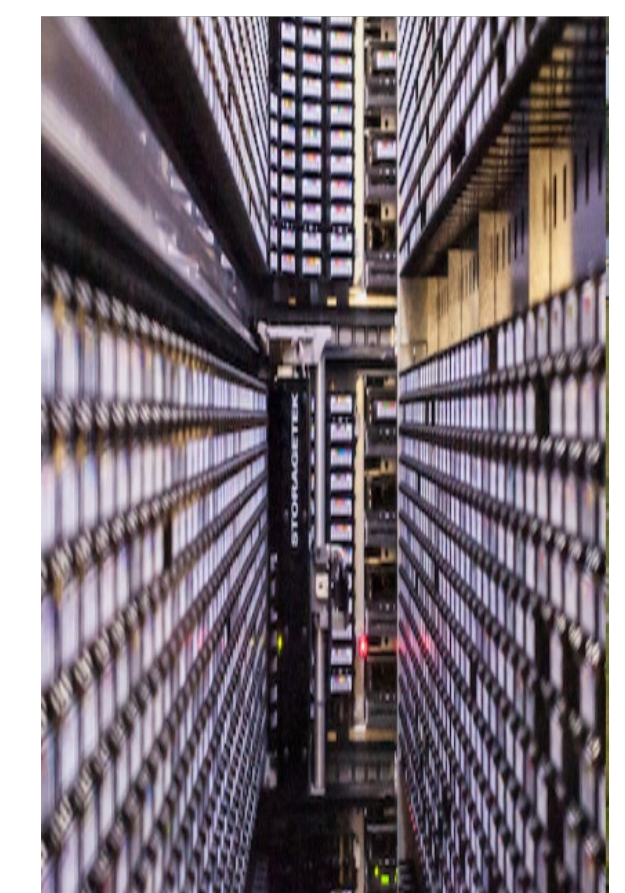
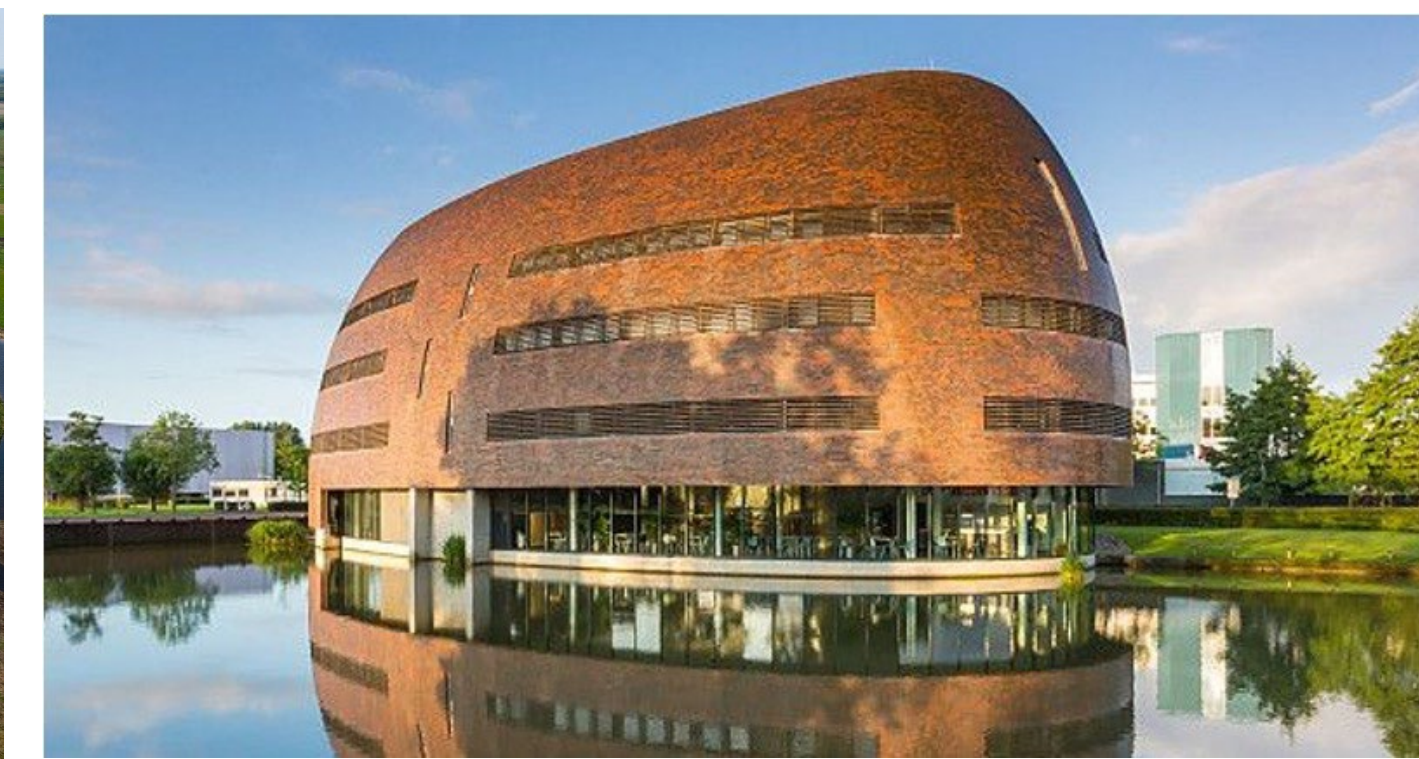
4 June 2024





Distributed research infrastructure: World-leading low-frequency radio telescope

- **Distributed network of antenna stations: condensed in NL, extending >2000 km in Europe**
 - 52 antenna stations in 8 countries: NL (38), DE (6), PL (3), IE, UK, FR, SE, LV + 2 new stations in 2025: IT, BG
 - Central observing operations, peer-reviewed access for the research community
- **Centrally operated data combination**
- **Distributed archive and data analysis centres : 60 PB stored**
 - Central operation and open science access for the research community
 - Supporting integrity, transparency and openness of science data
 - Currently 3 nodes: SURF (NL), FZJ (DE), PSNC (PL)



LOFAR's broad science case

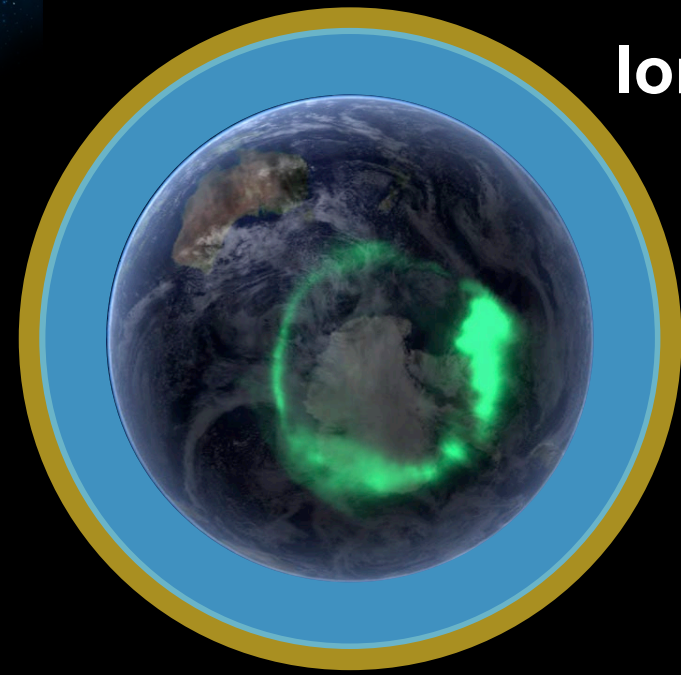
Meteors



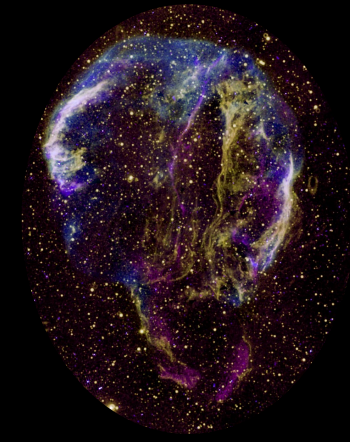
Lightning



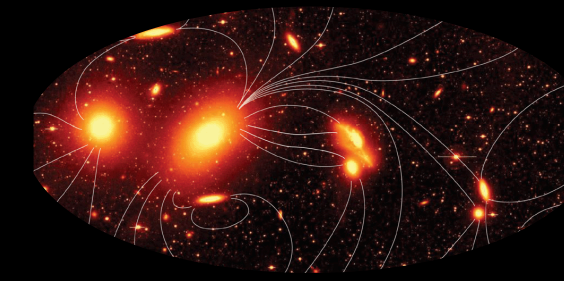
Ionosphere



Supernova remnants
Pulsar Wind Nebulae



Cosmic
Magnetism

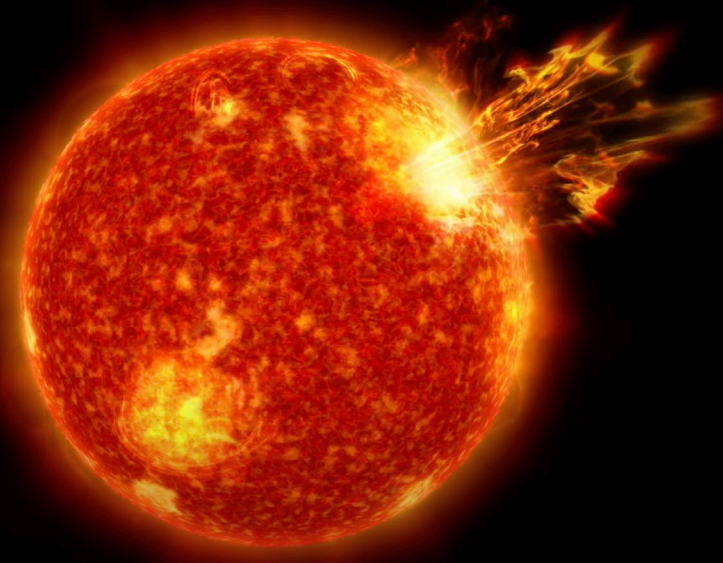


Clusters

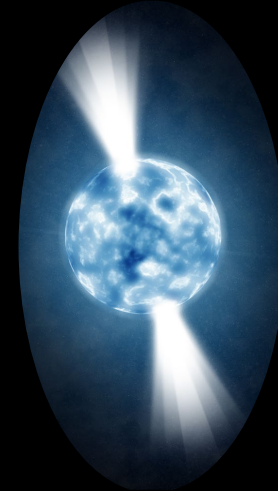


Heliosphere
Space Weather

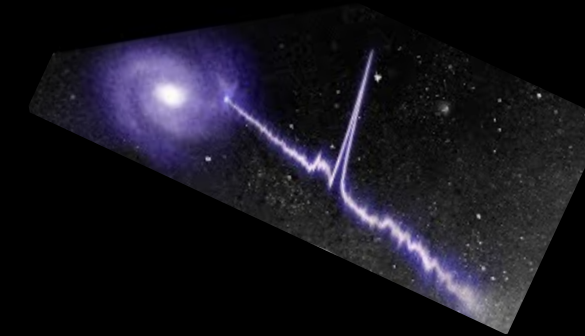
Sun



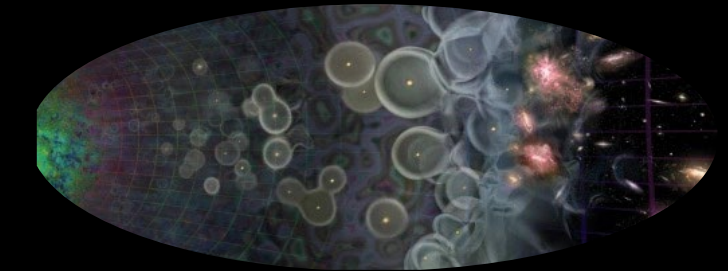
Pulsars



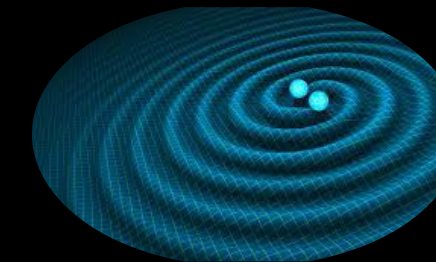
Fast Radio Bursts



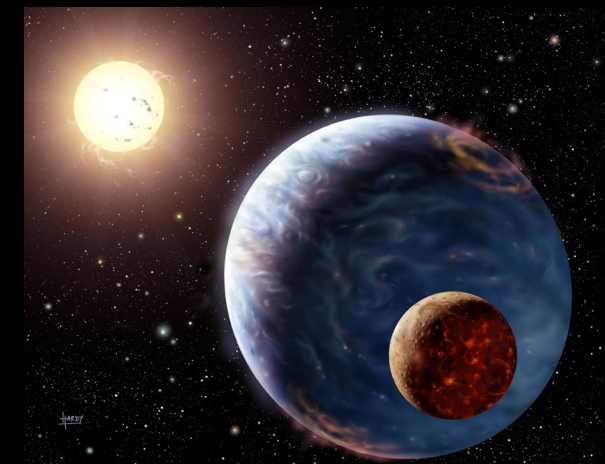
Early Universe
Cosmic Dawn



Gravitational
Wave Events



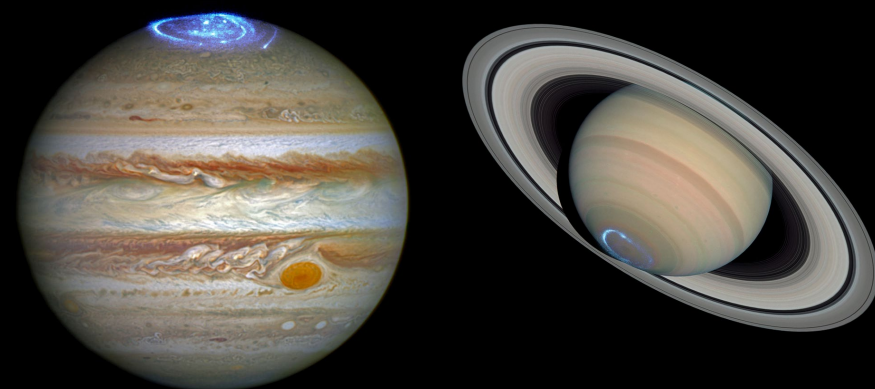
Exoplanets
Star-Planet Interaction



AGN physics



Solar System
Planets



Interstellar
Medium

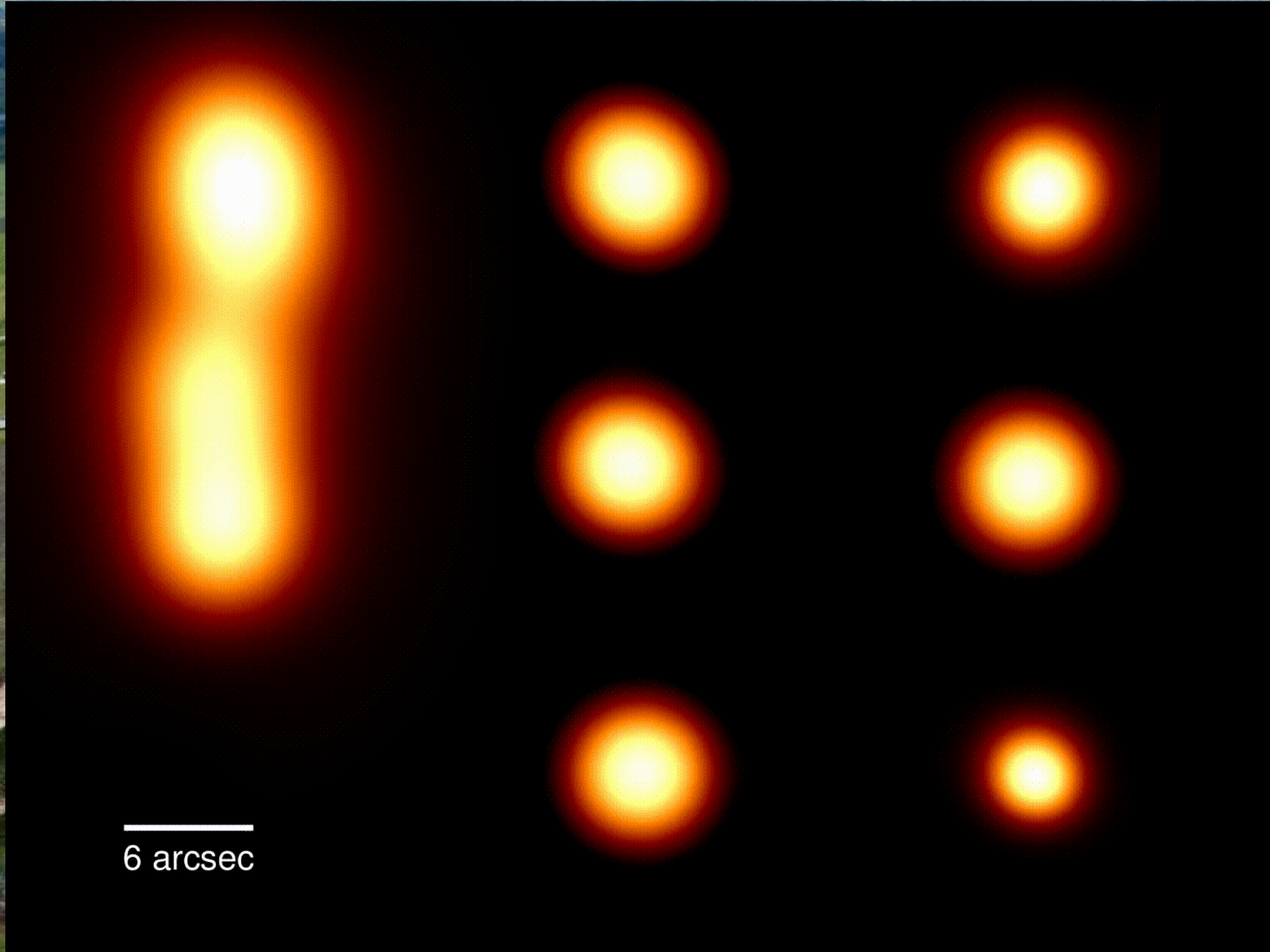


Cosmic Rays

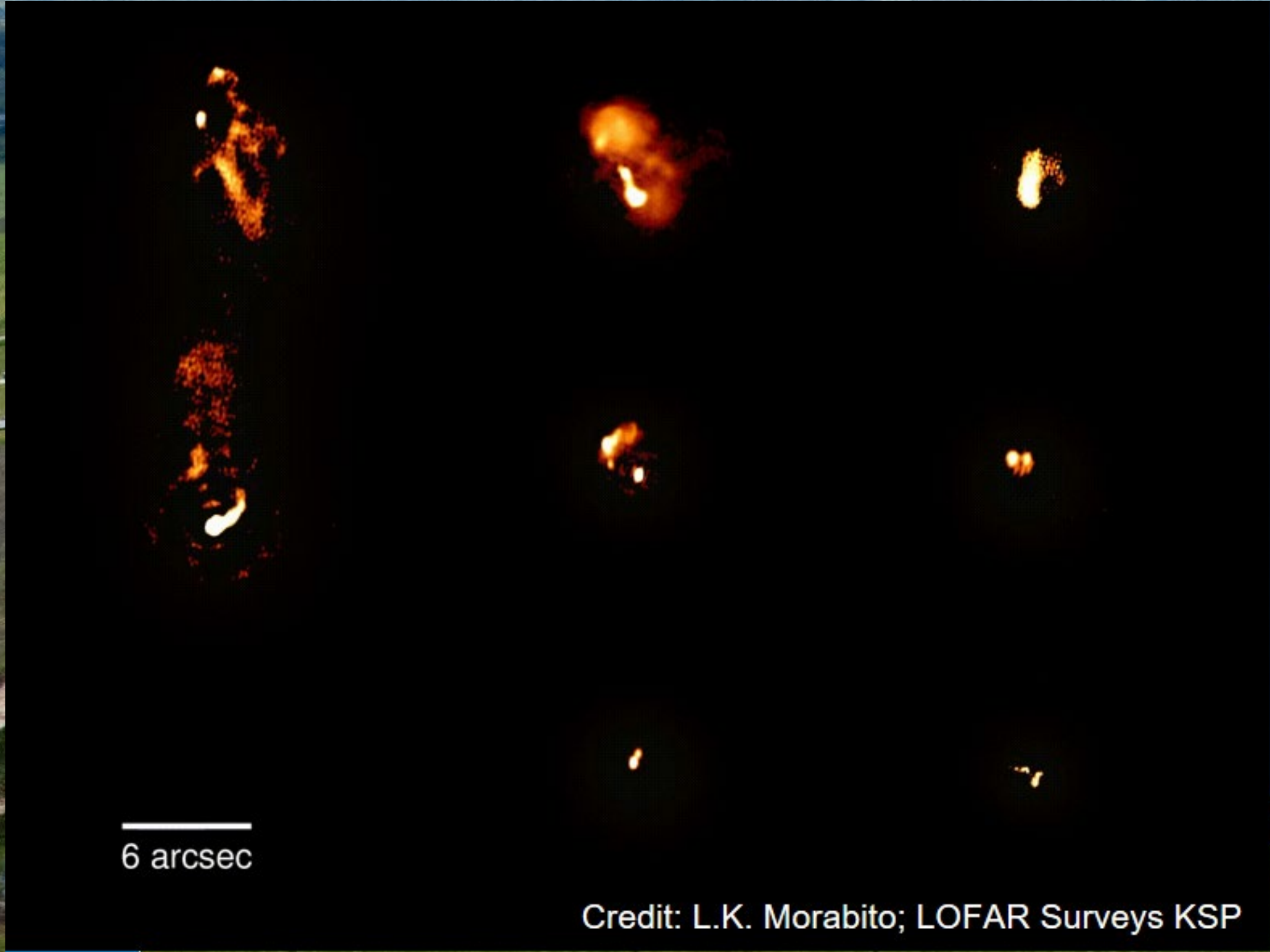


Nearby Galaxies





Credit: L.K. Morabito; LOFAR Surveys KSP



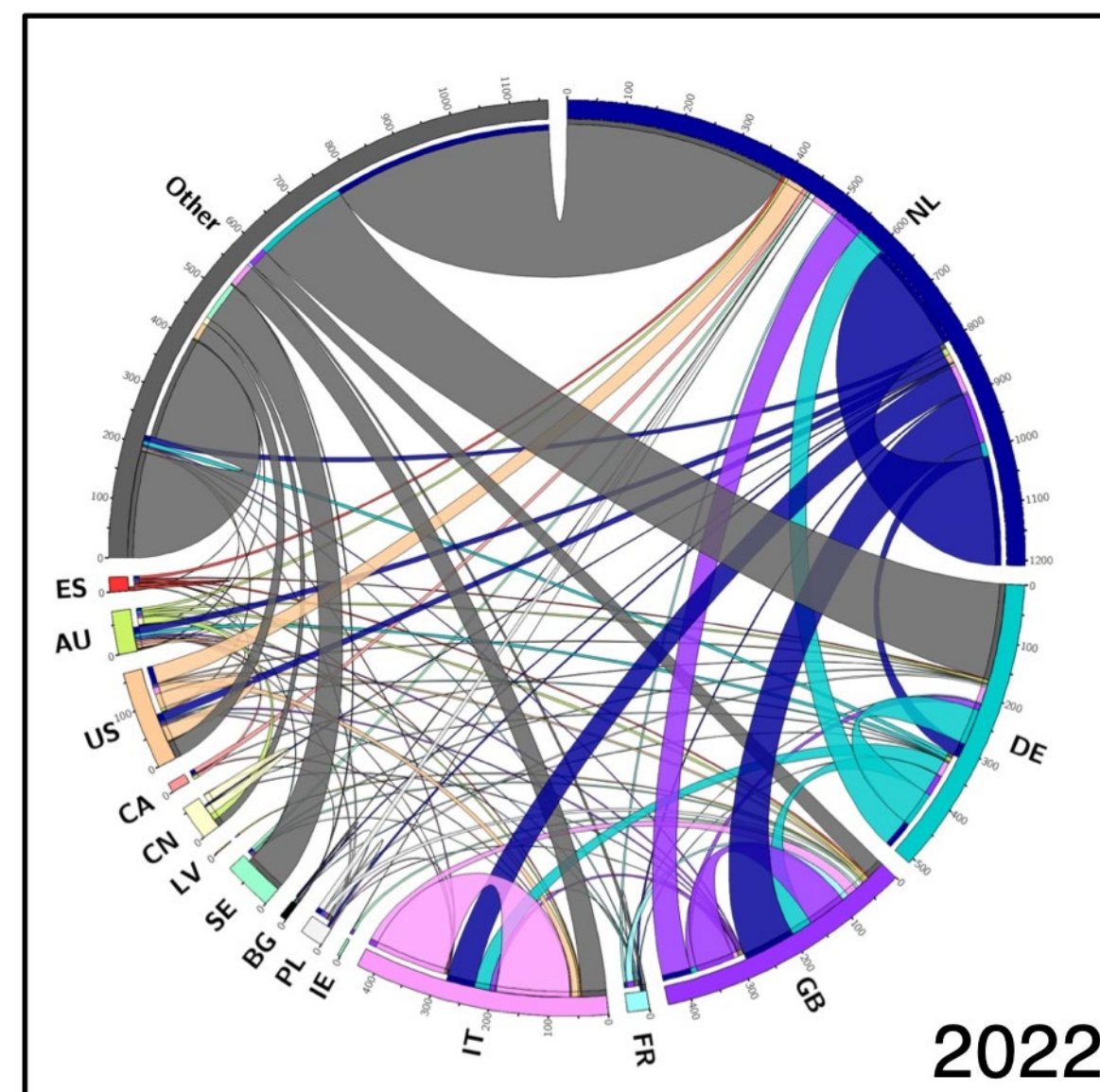
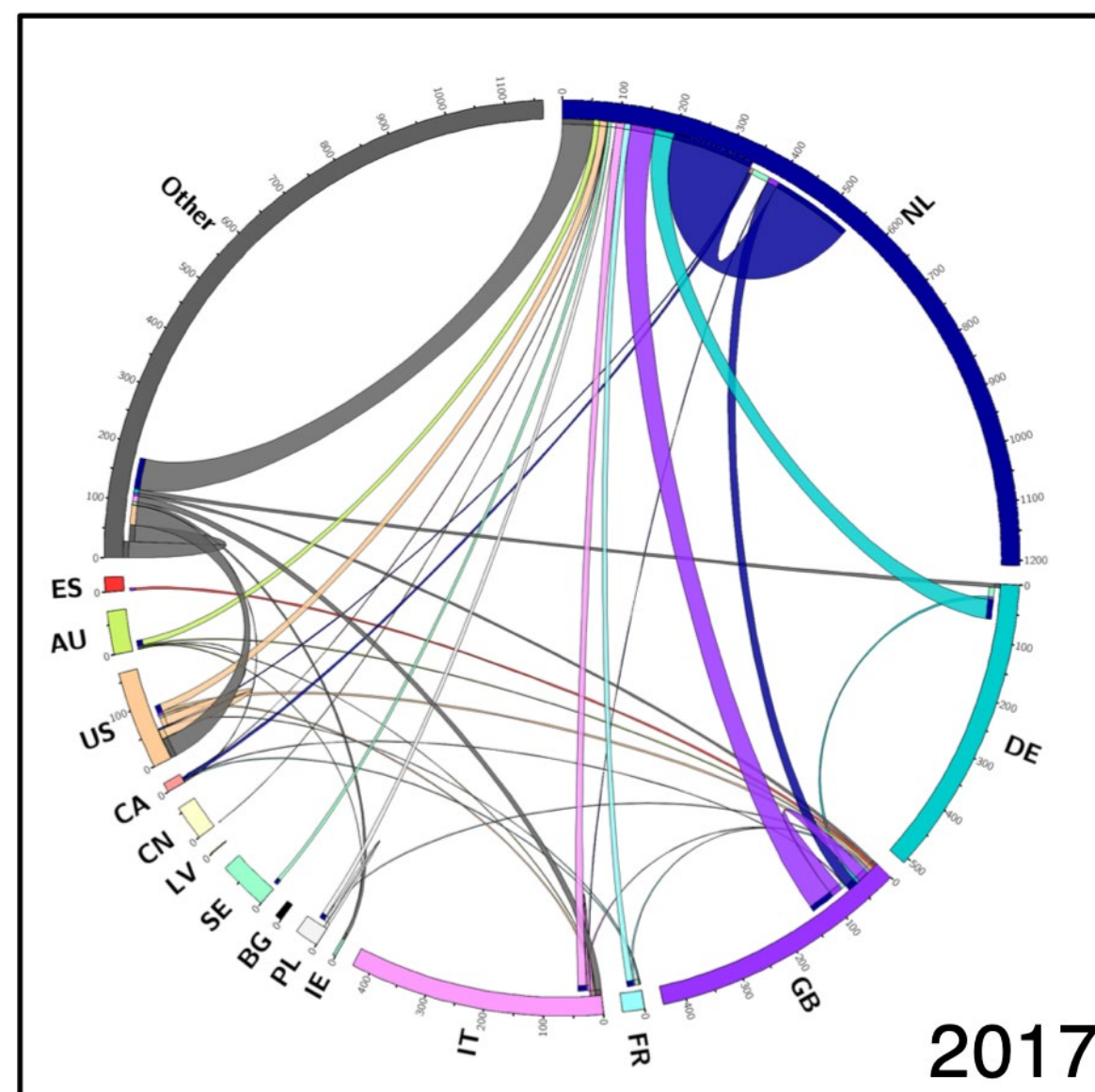
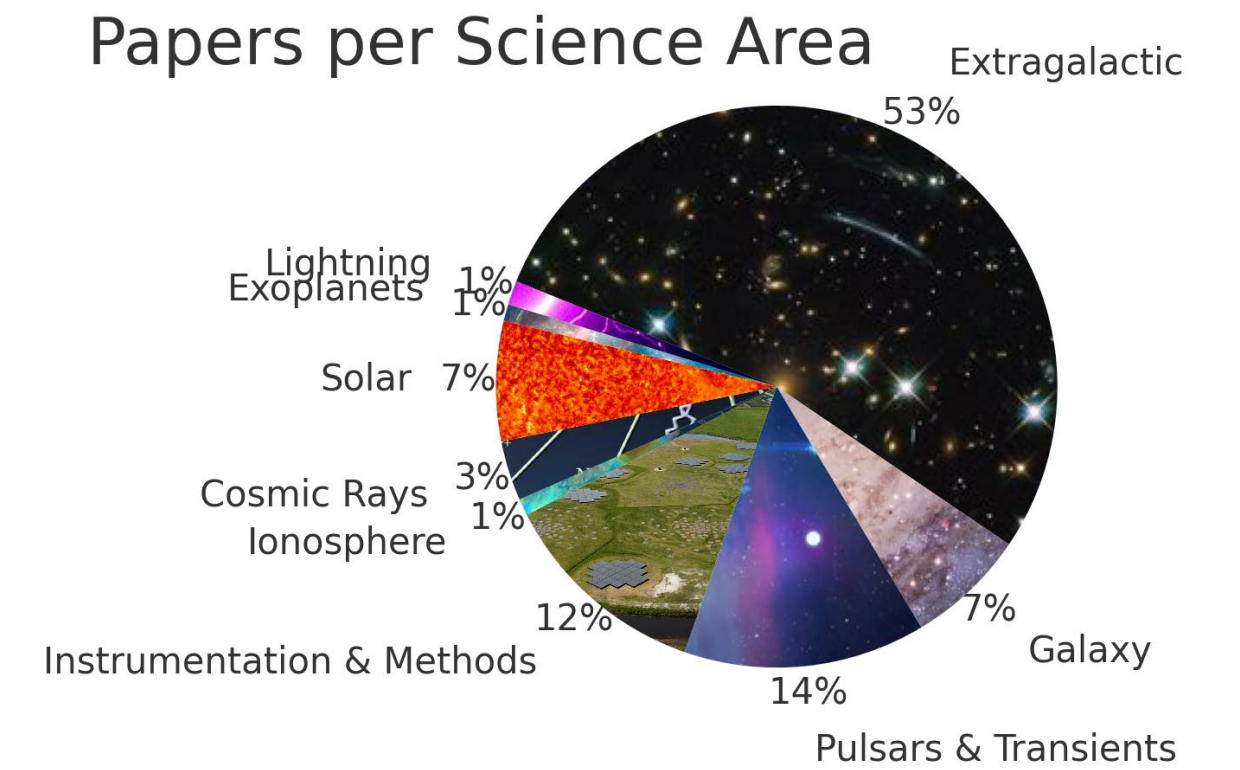
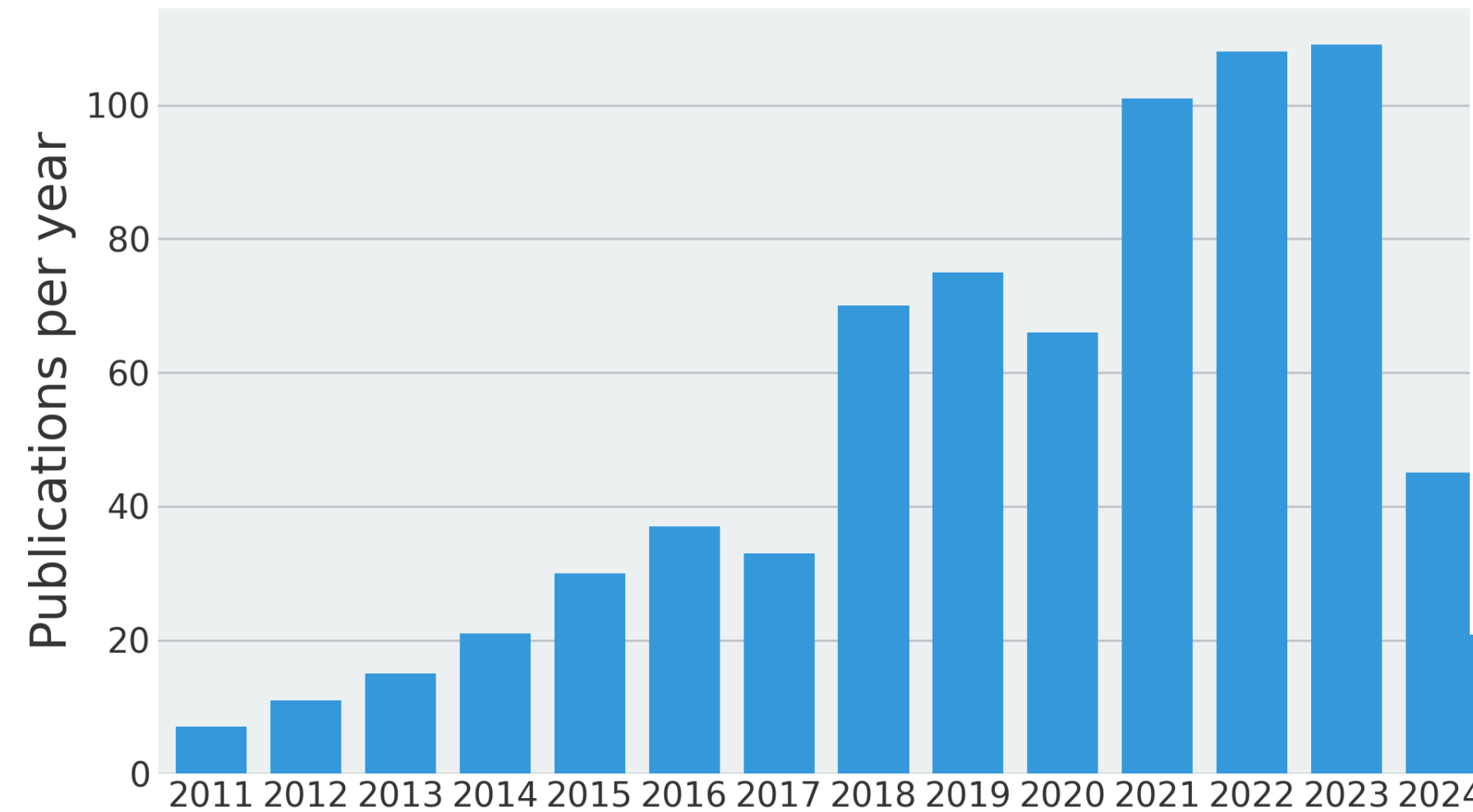
(2023)

Credit: L.K. Morabito; LOFAR Surveys KSP

Community evolution and science output

- >600 refereed publications
- ~2 papers per week
→ top 10% of all astronomical facilities

Credit: SDCO Team (ASTRON)



- **Measuring the success of LOFAR: Evolution of community and international collaborations**

- LOFAR community spans the entire globe and has grown by a factor of ~3 in the period 2017-2022.
- LOFAR collaborations increased by a factor of ~7 in the period 2017-2022.

Credit: J. Dempsey

LOFAR ERIC benefits

Robust coordination, joint operation, and development of the distributed LOFAR RI

Community-wide access to LOFAR data & wide range of science services

Vehicle for strategic joint fundraising

Partner in science policy dialogue at national, European, and global levels

Consolidation of multi-national collaborations, attracting new partners

Role in coherence and vitality of the European research community

Summary



- LOFAR is continuing to deliver high-impact scientific results, contributing to and extending its broad science case.
- LOFAR ERIC will serve as a robust governing entity for LOFAR, providing stability with a common vision and long-term policies and financing.
- LOFAR is proud to have become an ERIC!

