

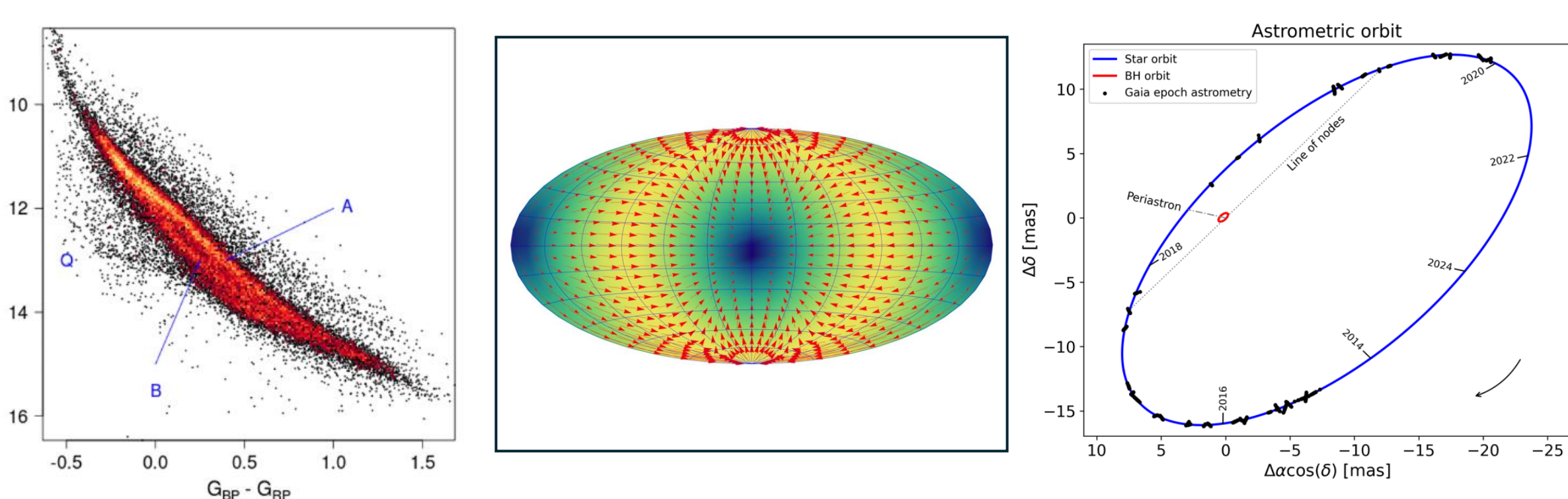
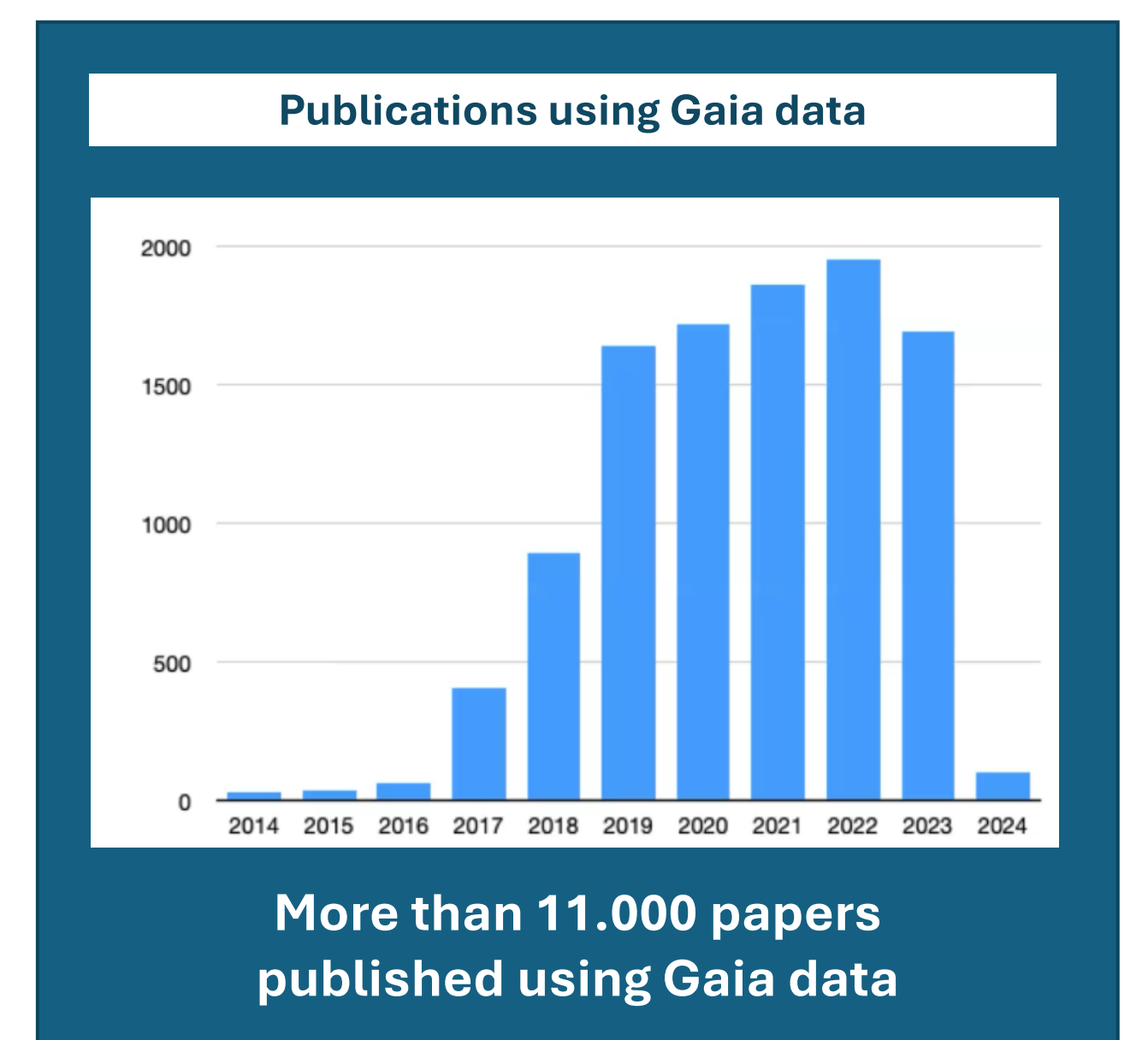
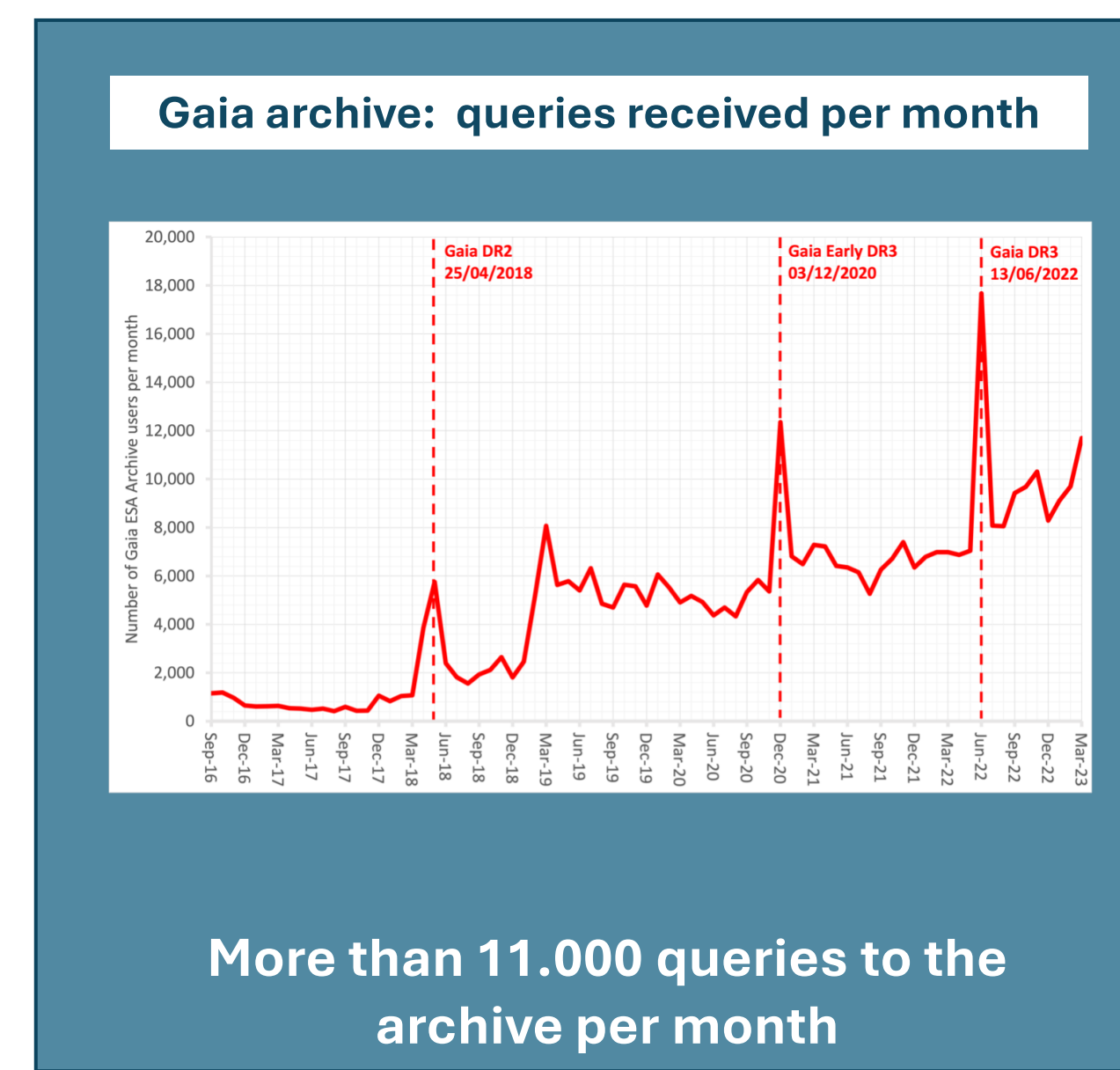
A (Galactic) journey through Gaia's decade of discoveries

Abstract: On July 25th, 2024, Gaia community will celebrate the 10th anniversary of successful scientific data acquisition. There have been 10 years of technological and scientific success with more than 11,000 papers published in all transversal fields of astronomy, from solar system to extragalactic science. **Here we present a by no means exhaustive list of the scientific achievements of the Gaia mission**, from the first discoveries to recent exciting findings. We emphasize the work that our Spanish REG Community - more than 200 members - have achieved. We also describe the REG Working Group (WG) activities and the challenges we envisage in the next years combining Gaia-DR4 (66 months of data, publication not before Q3-2026) and the on-ground ongoing and future spectroscopic surveys.

Gaia and REG Timeline	
18 mar 2010	Foundation of the REG
19 dec 2013	Gaia launch
25 jul 2014	Start of nominal mission
17 feb 2020	VI REG meeting: Expanding the Gaia legacy, the Role of Spanish Ground-based Facilities
3/12/2020	eDR3 release
3/6/2022	DR3 release
10/10/2023	Focused Product Release Papers (FPRs)
Q1-2025	Expected date for end-of-mission acquisition period
Q3-2025	WEAVE-REG meeting: GA + SCIP
Q4-2025	REG School: preparations for DR4 release and REG community tools (XP-TEAL and others)
Q1-2026	I REG-Junior Meeting: computing techniques (in-person)
Not before Q3-2026	DR4 release (66 months of data)
Q3-2026	SVO-Gaia School for DR4 data management
Q3-2026	REG participation at the "J-PAS data" school organized by J-PAS 2024 network
Q4-2026	VII REG Plenary meeting
Not before end 2030	DR5 release (all mission data)

Gaia mission numbers	
CURRENT DATE AND TIME 2024-07-10T08:31:16 (TCB)	
MISSION STATUS	
Satellite distance from Earth (in km)	1,413,109
Number of days having passed since 25 July 2014	3638
Number of days in mission extension	1821
OPERATIONS DATA (collected since 2014/07/25)	
Volume of science data collected (in GB)	134,599
Number of object transits through the focal plane	255,491,178,724
Number of astrometric CCD measurements	2,518,413,047,416
Number of photometric CCD measurements	506,986,259,998
Number of spectroscopic CCD measurements	49,587,745,851
Number of object transits through the RVS instrument	16,645,996,291

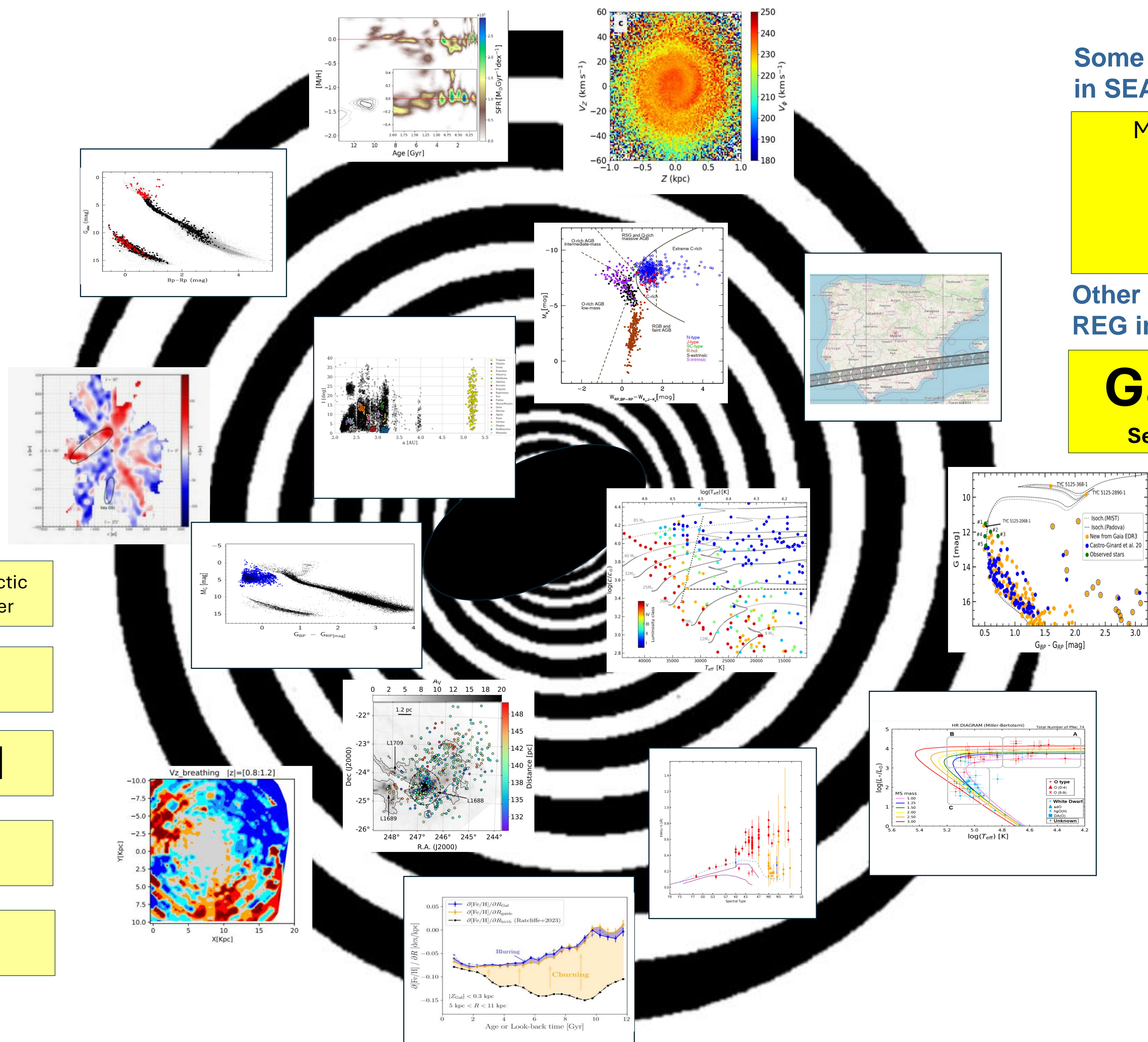
More than 255 trillion CCD astrometric measurements



Three examples of the scientific achievements of the Gaia mission

Left: The discovery of the double sequence of white dwarfs in the Hertzsprung-Russell diagram never seen before, continues to pose great challenges. Center: quasars' own motions have made possible to quantify, for the first time using Gaia data, the acceleration of the barycenter of the solar system with respect to the rest reference system of the Universe. Right: the orbit of the first stellar black hole of 30 solar masses. Credits: ESA/Gaia/DPAC.

Research activities led by REG's members (2018-2024) & recently added WGs



Some related activities in SEA-2024:

- Minisimposia:
- MS-WEAVE
- SE-Gaia
- MS-SVO
- SE-JPAS

Other contributions as REG in SEA-2024:

GaiaNIR
See poster P198

New synergies:

Gaia-GC Galactic Center

Gaia-VLA

Gaia-Euclid

Gaia-CTA

Gaia-DESI