

GENIUS

Gaia status



gaia



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Overview

- Gaia in routine operations since July 2014
- Scanning operations with observing strategy of continuous measuring
- Dead-time: orbit maintenance, micrometeoroids, decontaminations, groundstation weather
- Nominal 5-year mission ends mid-2019
- Estimated end of mission due to cold gas exhaustion end-2023 (± 1 year)
- Process started to seek funding for mission extension (mid-2019 till the end)

Astrometry

- Astrometric measurements: >600 billion
- $G < 20.7$ mag (fainter than original $G = 20$ limit)
- In crowded regions on-board resource allocation exhausted
- Selected crowded regions imaged with Gaia Sky Mapper
- Bright limit around $G = 2-3$ mag
- All bright stars imaged ($G < 3$ mag) (Gaia SM)
- Looking into more complete data collection for these stars

Photometry

- Photometric measurements: >130 billion
- $G < 20.7$ mag
- Spectrophotometry
 - 330-680 nm BP
 - 640-1050 nm RP
- Astrometric measurements also photometric in G-band
- In crowded regions on-board resource allocation exhausted
- Bright limit around $G = 2-3$ mag
- Looking into more complete data collection for these stars

Spectroscopy

- Spectroscopic measurements: >12 billion
- GRVS < 16.2 mag
- 845-872 nm with R about 11,000
- Radial Velocity Spectrometer for >100 million radial velocities
- Spectroscopy till about GRVS=12 mag
- In crowded regions on-board resource allocation exhausted to some extent, but crowdedness sets in earlier
- Bright limit around G=2-3 mag
- More complete data collection for these stars may take place

Scientific performance

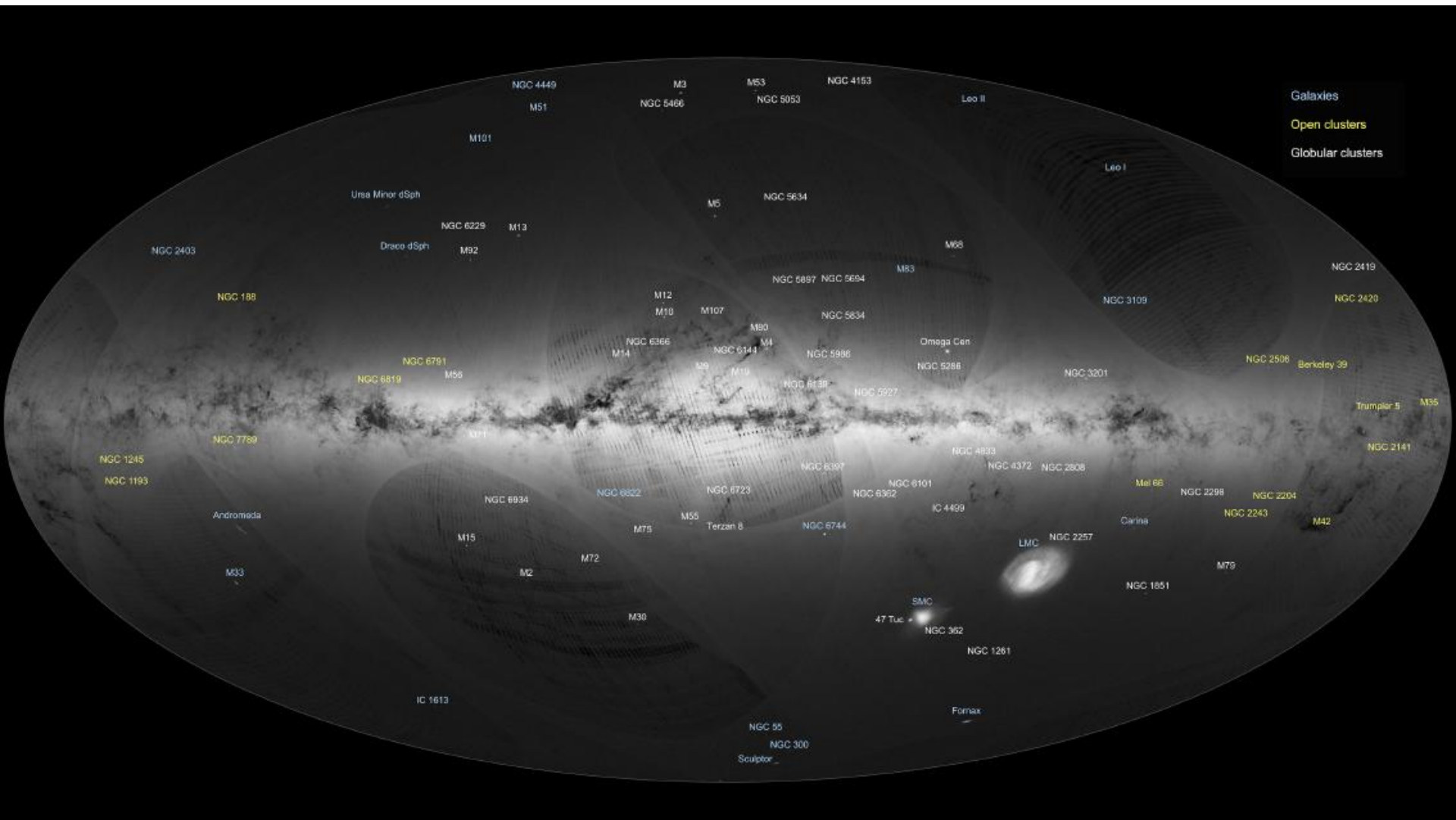
End of mission scientific performance estimates for an unreddened Solar type (G2V) star

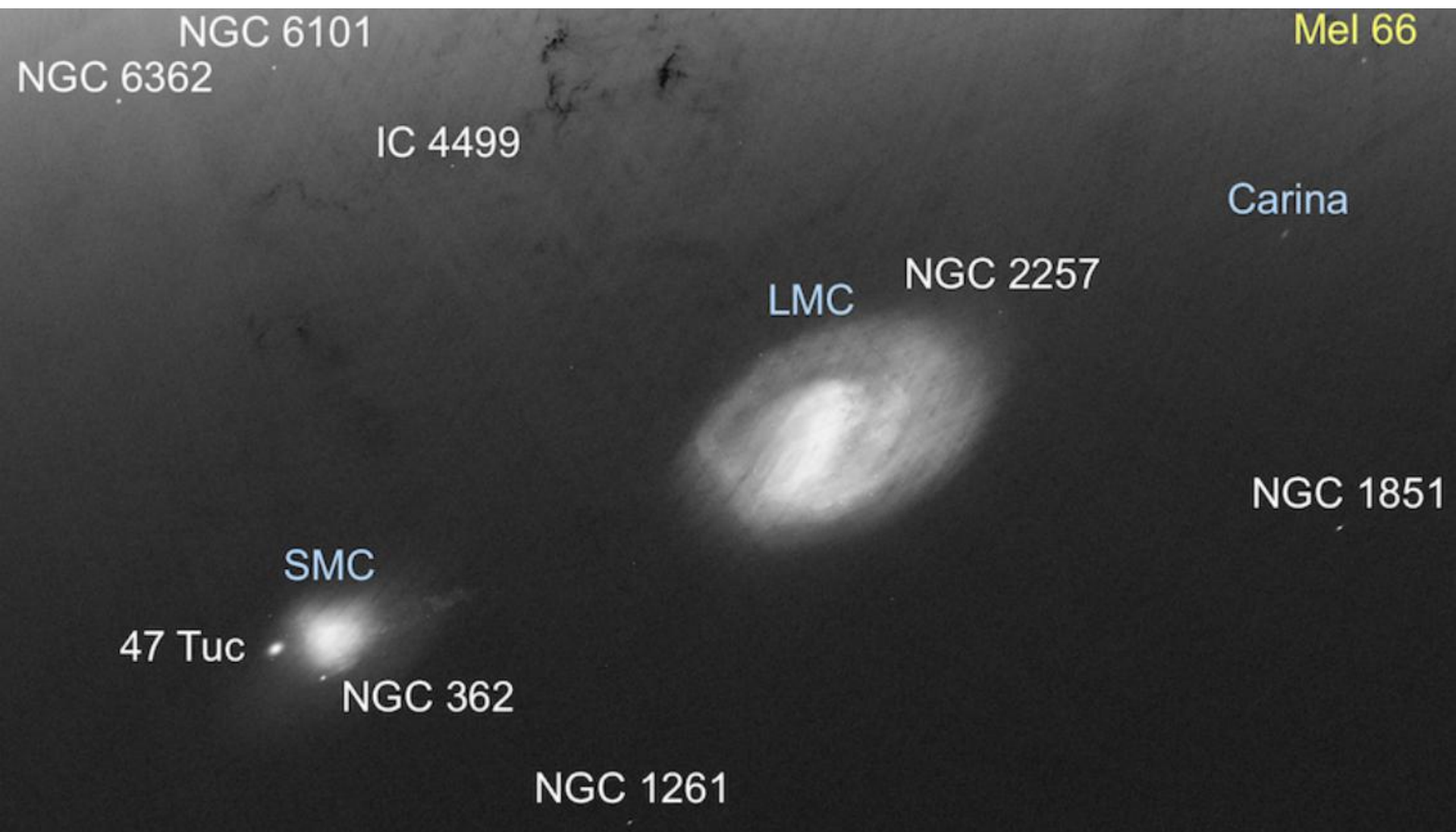
V-magnitude	Astrometry (parallax)	Photometry (BP/RP integrated)	Spectroscopy (radial velocity)
6 to 12	5-14 μas	4 mmag	1 km/s
15	25 μas	4 mmag	13 km/s
20	540 μas	60 (RP) – 80 (BP) mmag	

DR1 has been published
(next presentation)

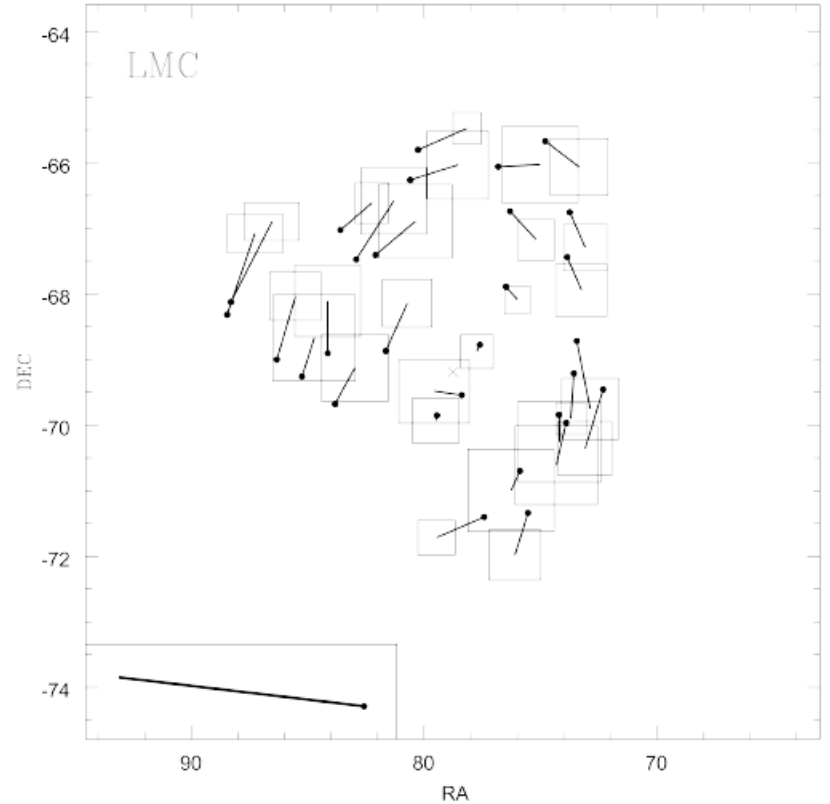
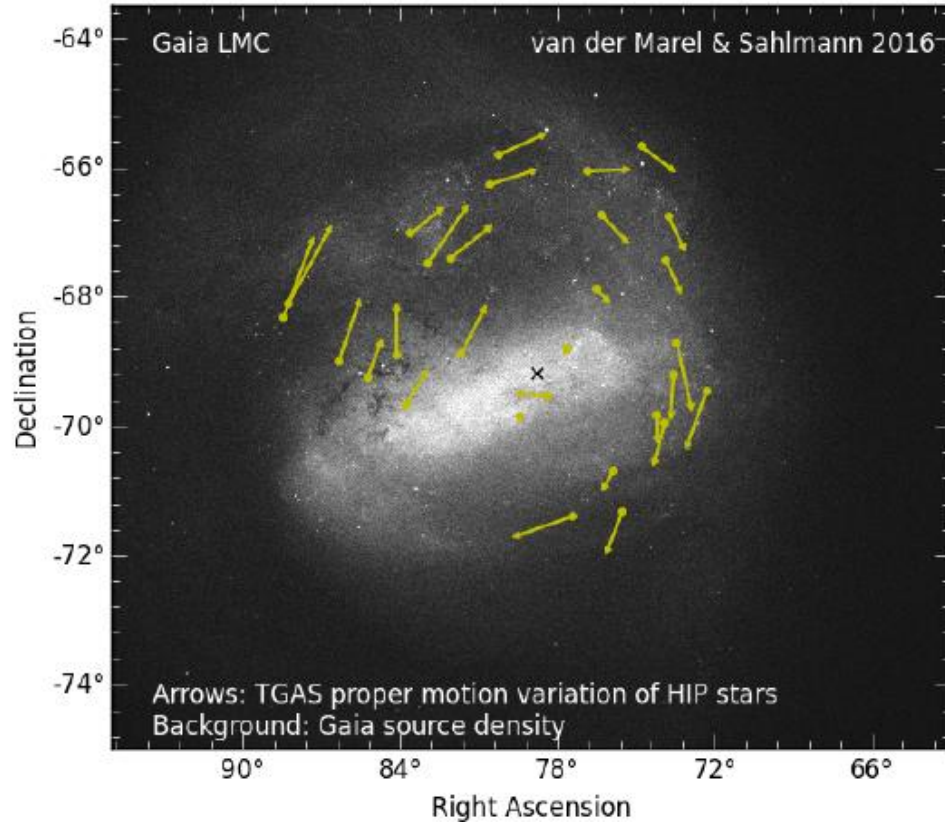
Scientific results already
arriving

DR1 all-sky composition



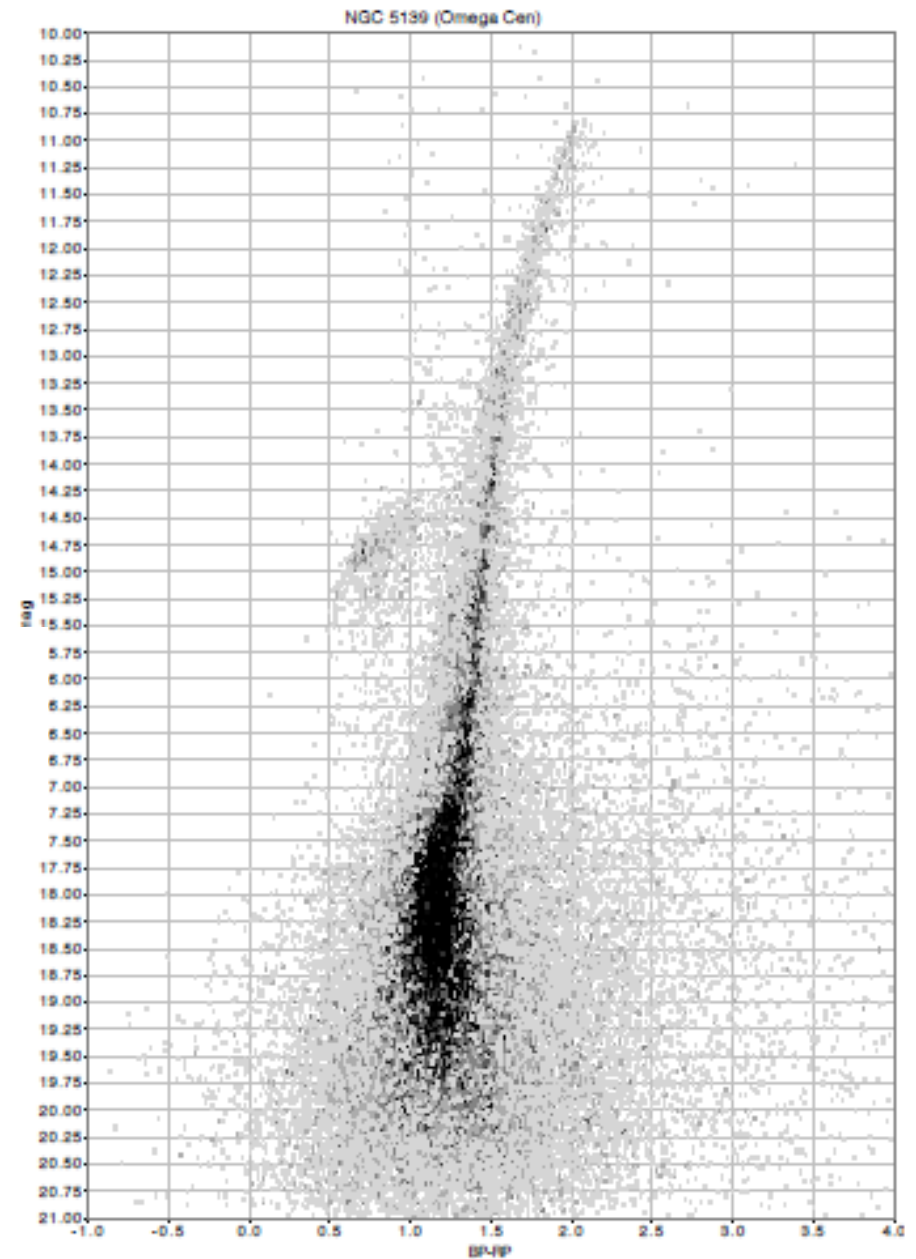


van der Marel & Sahlmann, 2016



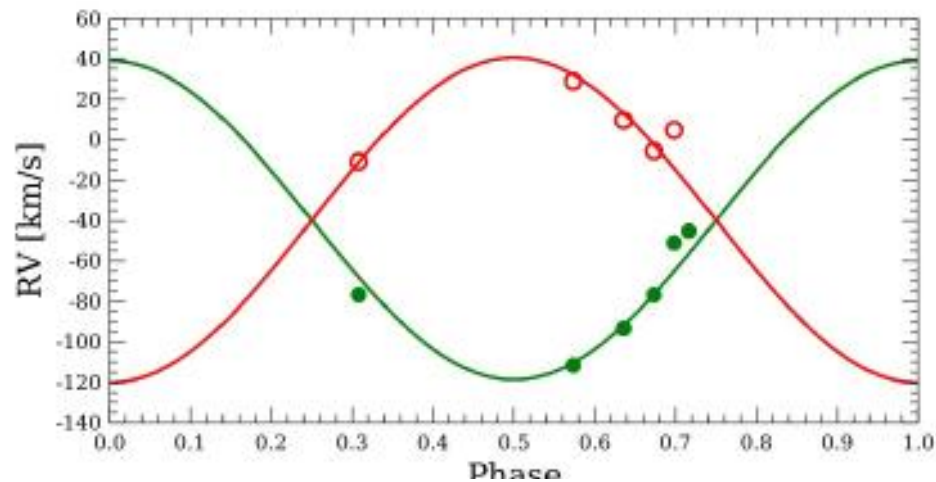
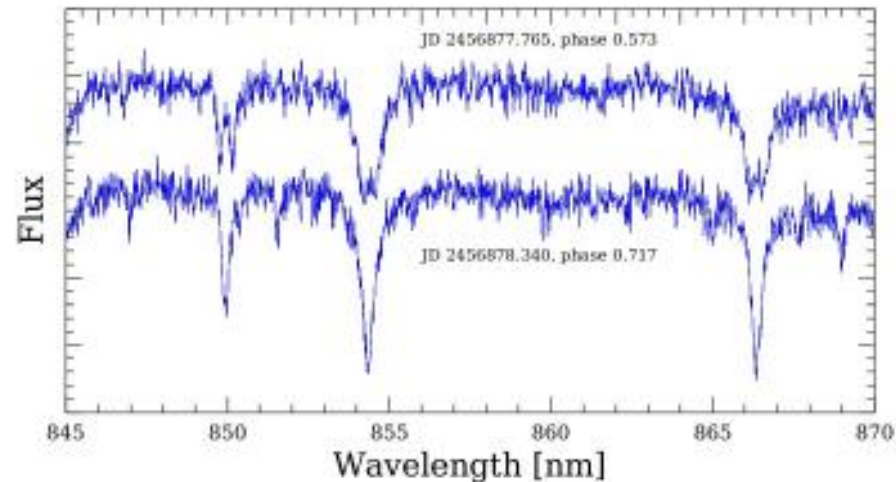
Preliminary photometry

*ESA/Gaia/DPAC/CU5/F. De Angeli,
D.W. Evans, M. RIELLO (University of Cambridge)*



Double lined spectroscopic binaries

HIP 70674



credits: ESA/Gaia/DPAC/CU6/Yassine Damerджи (Observatoire d'Alger/
Institut d'Astrophysique et de Géophysique de Liège)
& Pasquale Panuzzo (CNRS/Observatoire de Paris)



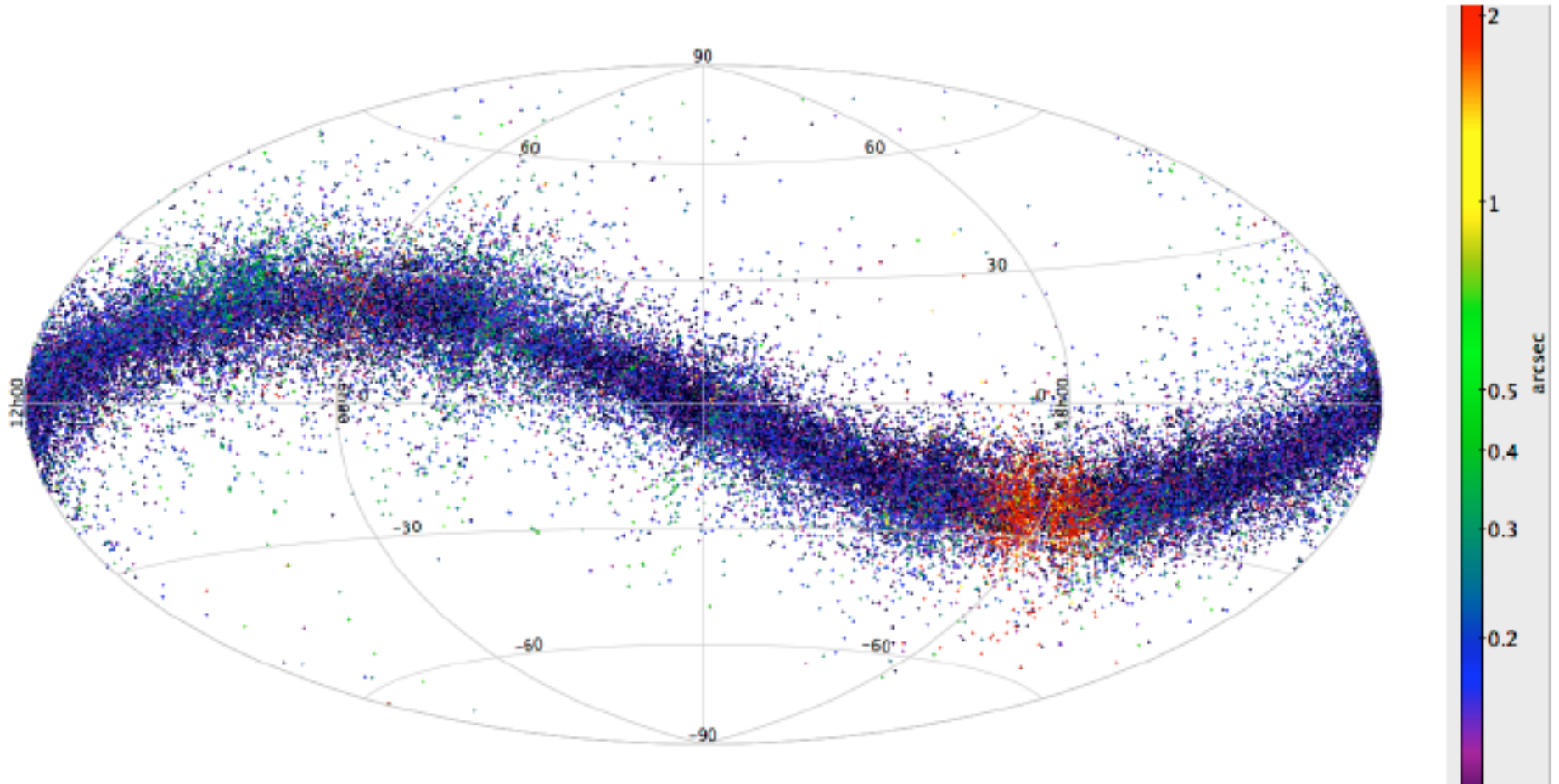
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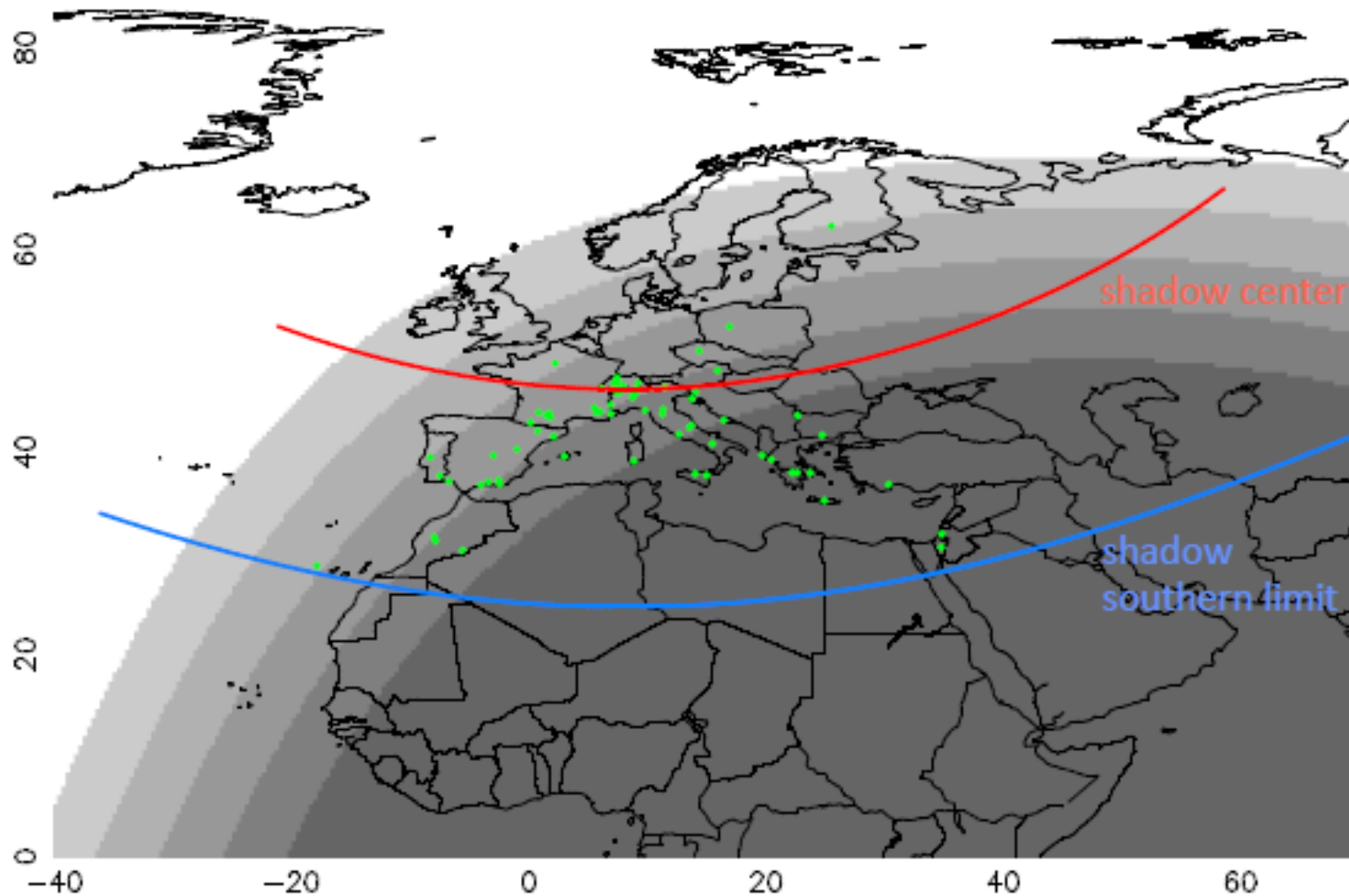
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Asteroid detection

Credits: ESA/Gaia/DPAC/
CU4, L. Galluccio, F.
Mignard, P. Tanga
(Observatoire de la Côte
d'Azur)



The July 19, 2016 Pluto occultation
our prediction as of early July



green dots: sites involved in the campaign (not all got data!)



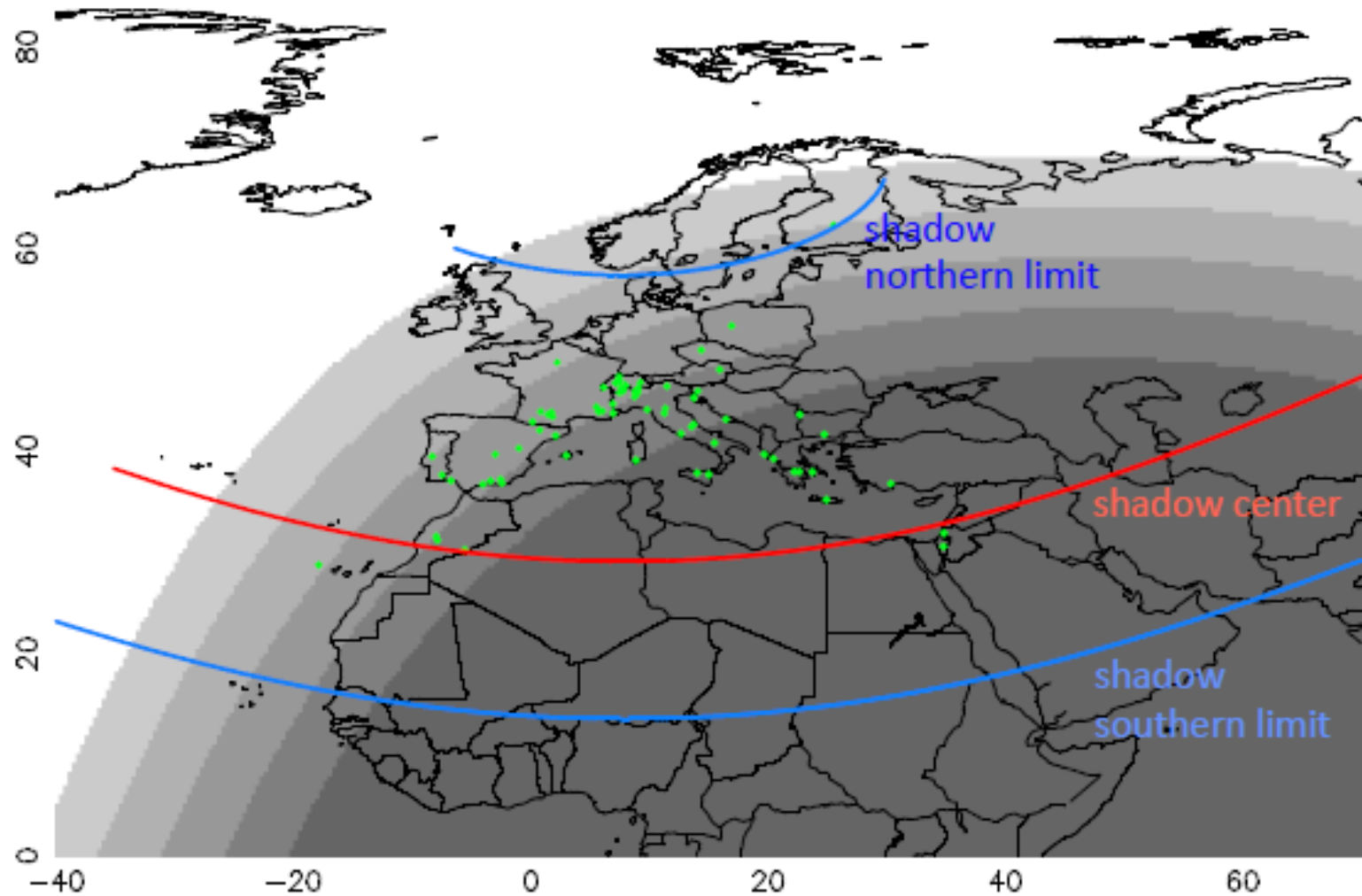
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April 2017

The July 19, 2016 Pluto occultation, prediction using the GAIA star position (and estimation of its pm), plus the New Horizons-updated ephemeris



green dots: sites involved in the campaign (not all got data!)