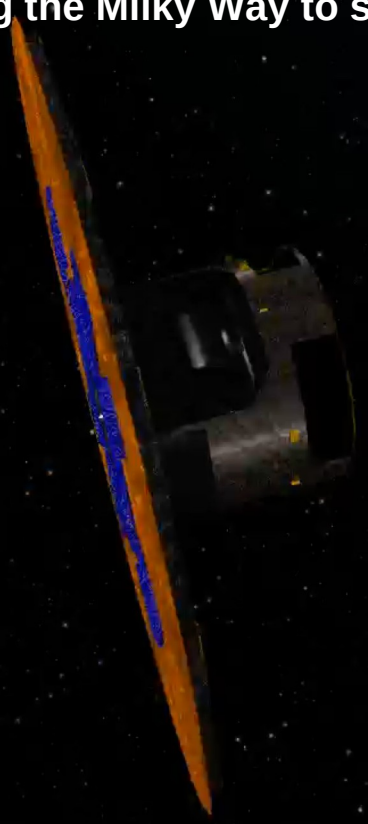
# Gaia Outreach

**MW-Gaia: Bringing the Milky Way to schools2021**



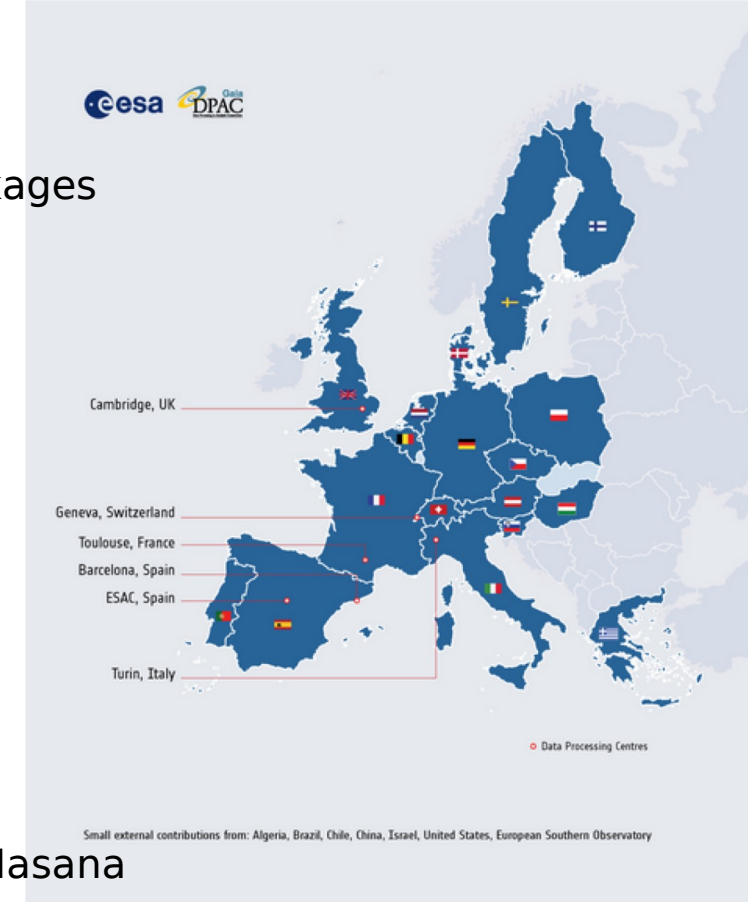
Stefan Jordan
Astronomisches Rechen-Institut
Zentrum für Astronomie
Universität Heidelberg

Gaia scanning the sky for Gaia EDR
S. Jordan & T. Sagristà with Gaia Sk

# DPAC: Gaia Data Processing and Analysis Consort

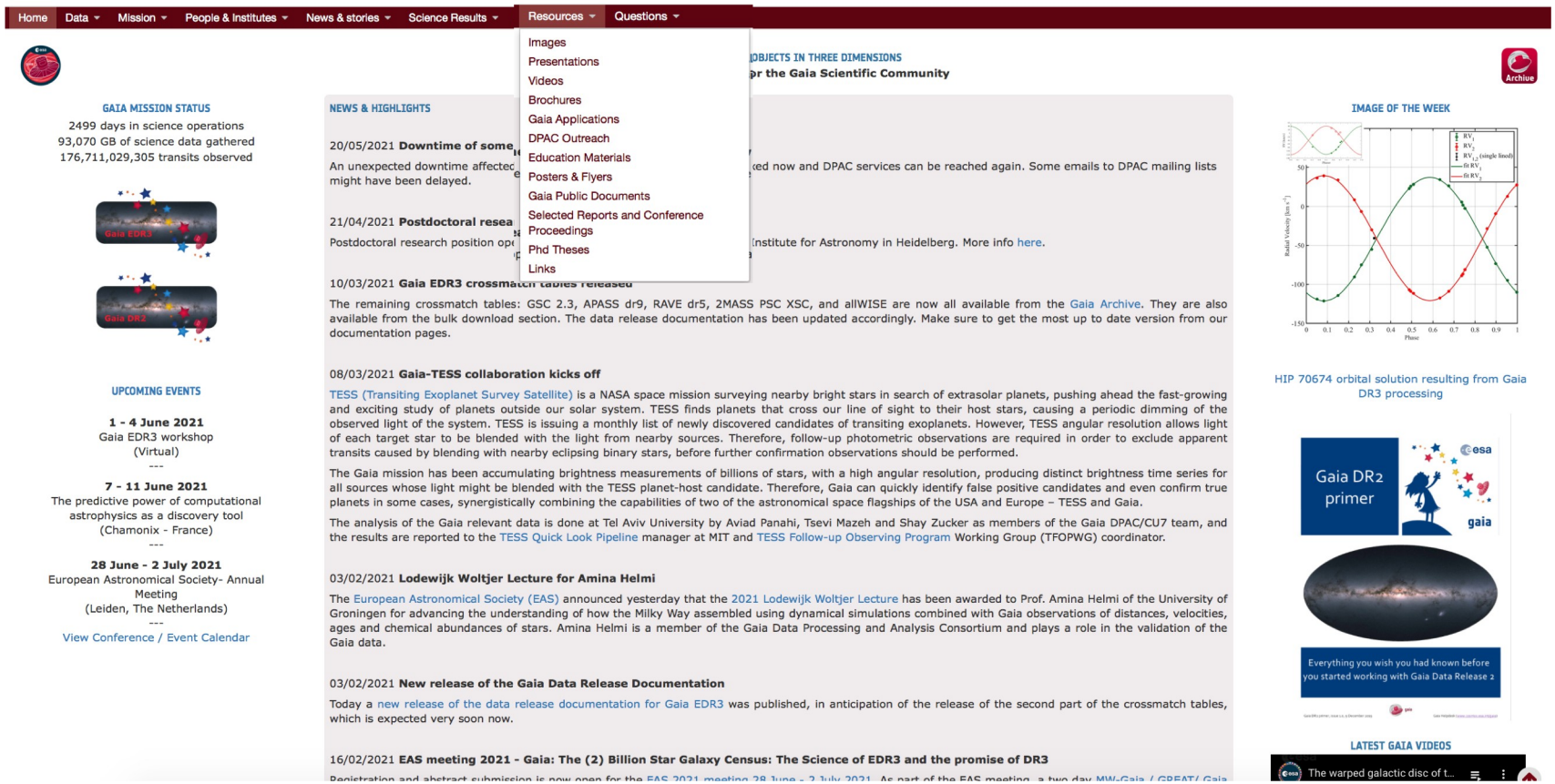
Responsible for the production of the Gaia catalogues

- More than 400 astronomers and software engineers
- Divided into nine Coordination Units and many work packages


About half of those working on Gaia
DPAC Consortium meeting in Padua (1-5.10.2018)
DPAC = Data Processing and Analysis Consortium
**Responsible for DPAC outreach:** Stefan Jordan, Eduard Masana

# ESA Gaia Cosmos Page

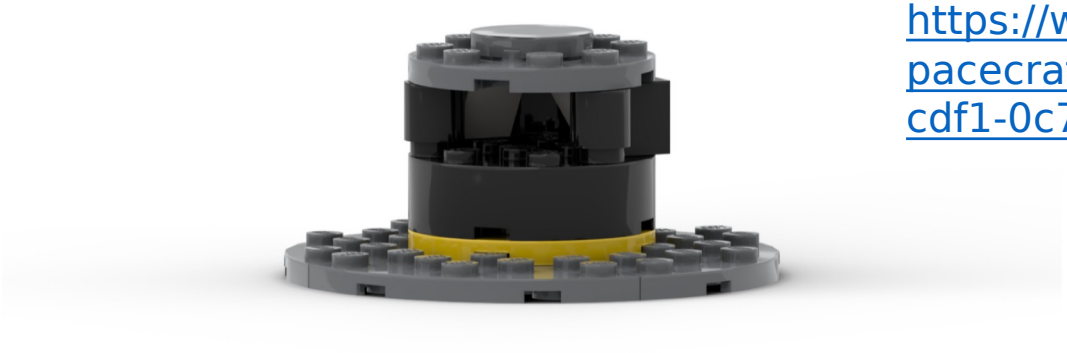



https://cosmos.esa.int/web/gaia

# Building a mini Gaia with Lego

The Gaia Space Telescope

Mapping over a billion objects in our Milky Way



https://www.cosmos.esa.int/gaia

design Courtesy William Taylor

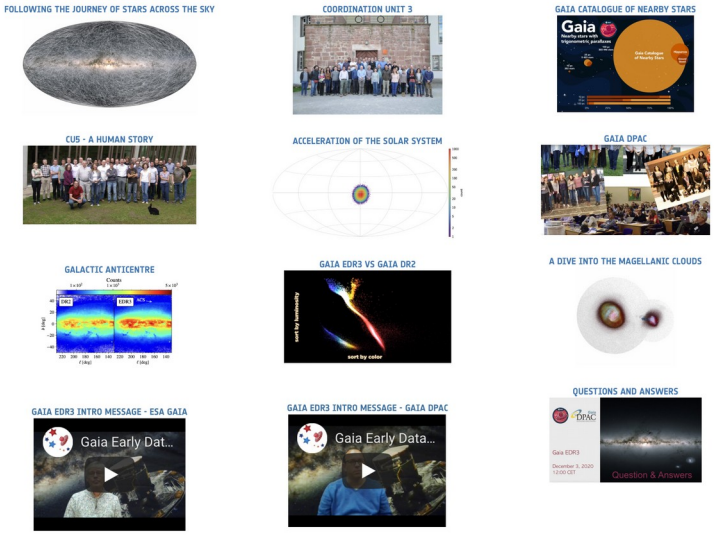
https://www.cosmos.esa.int/documents/29201/489737
pacecraft_building_instructions.pdf/815451ed-dd5a-d58
cdf1-0c7ffc564f7c

# Outreach for the newest Gaia catalogue: Gaia Early Data Release 3

Main focus on four science demonstration papers:

- The Gaia Catalogue of Nearby Stars: The 100 pc sample
- The 3D structure and properties of the Magellanic Clouds with Gaia EDR3
- The Galactic anti-centre in EDR3
- Acceleration of the solar system from Gaia astrometry

https://www.cosmos.esa.int/web/gaia/edr3-st




Local events on the occasion of Gaia EDR3 in 15 countries

https://www.cosmos.esa.int/web/gaia/edr3-events

# Hertzsprung-Russel Diagram with Gaia EDR3

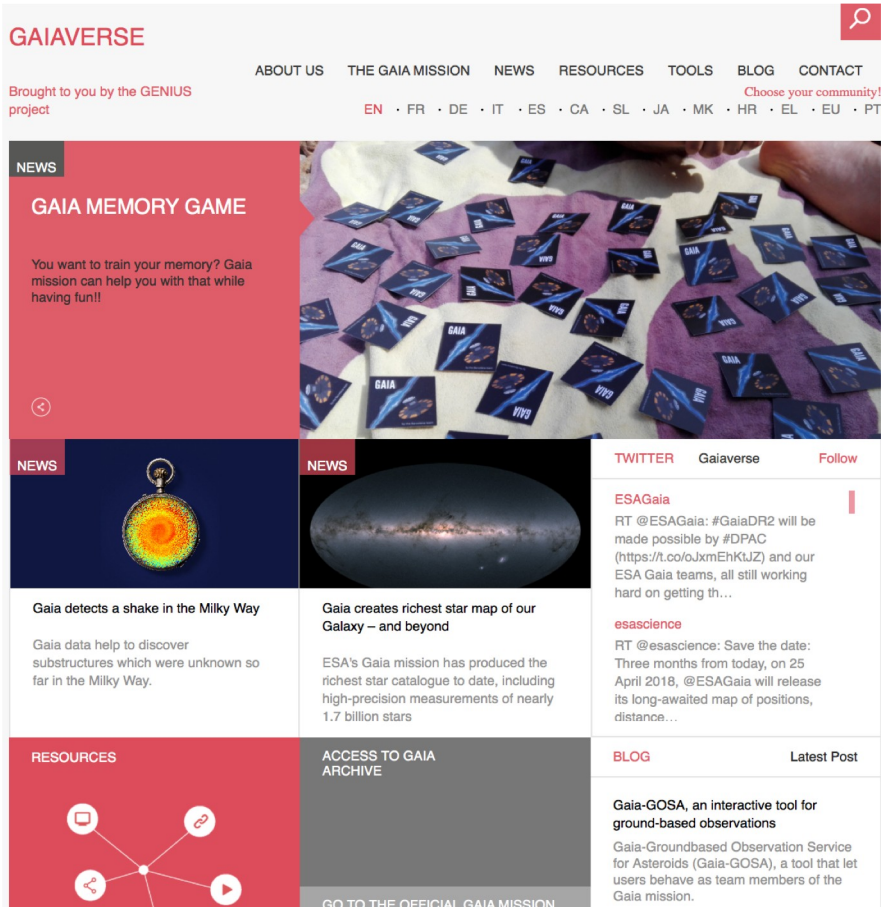
https://youtu.be/QKXhtzJLZI

Gaia EDR3 stars closer than 125 pc or 400 lightyears

Rohrbasser, K. Nienartowicz, L. Eyer, ESA/Gaia/D

# Gaiaverse: In Several Languages

(mentioned by Carme Jordi yesterday)




Currently not very active but will be used for the MW-Gaia outreach in the future.

https://gaiaverse.eu

# Short explanation videos from Cambridge
## (already mentioned by Fraser Lewis yesterday)

### Gaia in one minute

This is a series of six cartoons about Gaia. The first four cartoons listed below were created by Angel Eye Media and the Gaia team in Cambridge. You may download these cartoons in a range of formats from http://sms.cam.ac.uk/collection/1638609.

The other two cartoons were produced for Gaia by the Open University as episodes of "60 Second Adventures in Astronomy" series.

**Why we need Gaia**

How old are the stars?
Watch cartoon

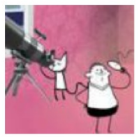
**What's the big deal about Gaia?**

Just how do you go about creating a 3D map of a galaxy?
Watch cartoon

**How do we benefit from space?**

What's the pay-off for me?
Watch cartoon

**Can I be part of Gaia?**



Find out how you can get involved in Gaia and contribute to new and exciting discoveries in our Galaxy and beyond.
Watch cartoon

**Taking a Galactic Census**

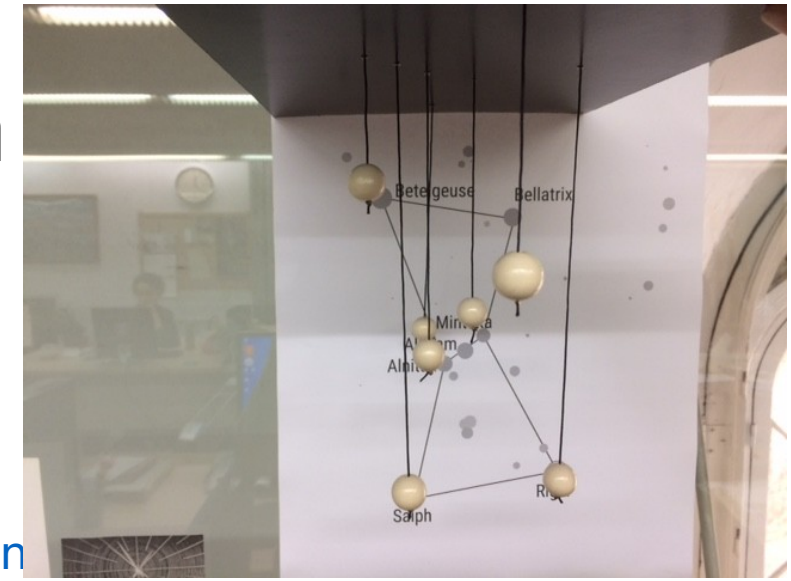
How do you take a census in space?
Watch cartoon

**Gaia and the Killer Asteroids**

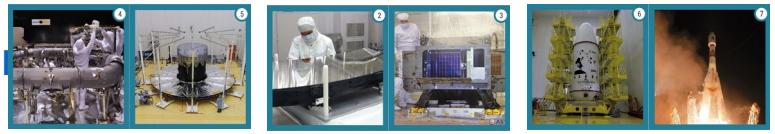
How will Gaia help us spot Killer Asteroids?
Watch cartoon

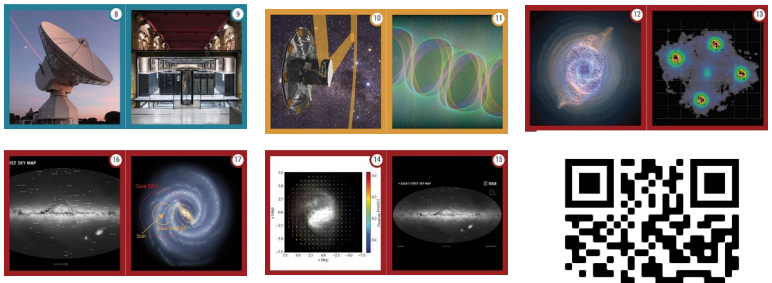
https://www.gaia.ac.uk/multimedia/gaia-one-minute

# Gaia Teaching tools from University of Barcelona




- Bookmarks
- Memory Game: https://gaia.ub.edu/?p=10302
- 3 D constellations for schools: https://serviastro.ub.edu/en/projects/constellations-in
- Instructions to build (in Spanish): https://serviastro.ub.edu/sites/serviastro/files/fitxers/019-09/conscast.pdf



http://www.ub.edu/laubdivulga/festacienciaub/festacienciaVII/bombolla-3d.html

# Gaia Posters

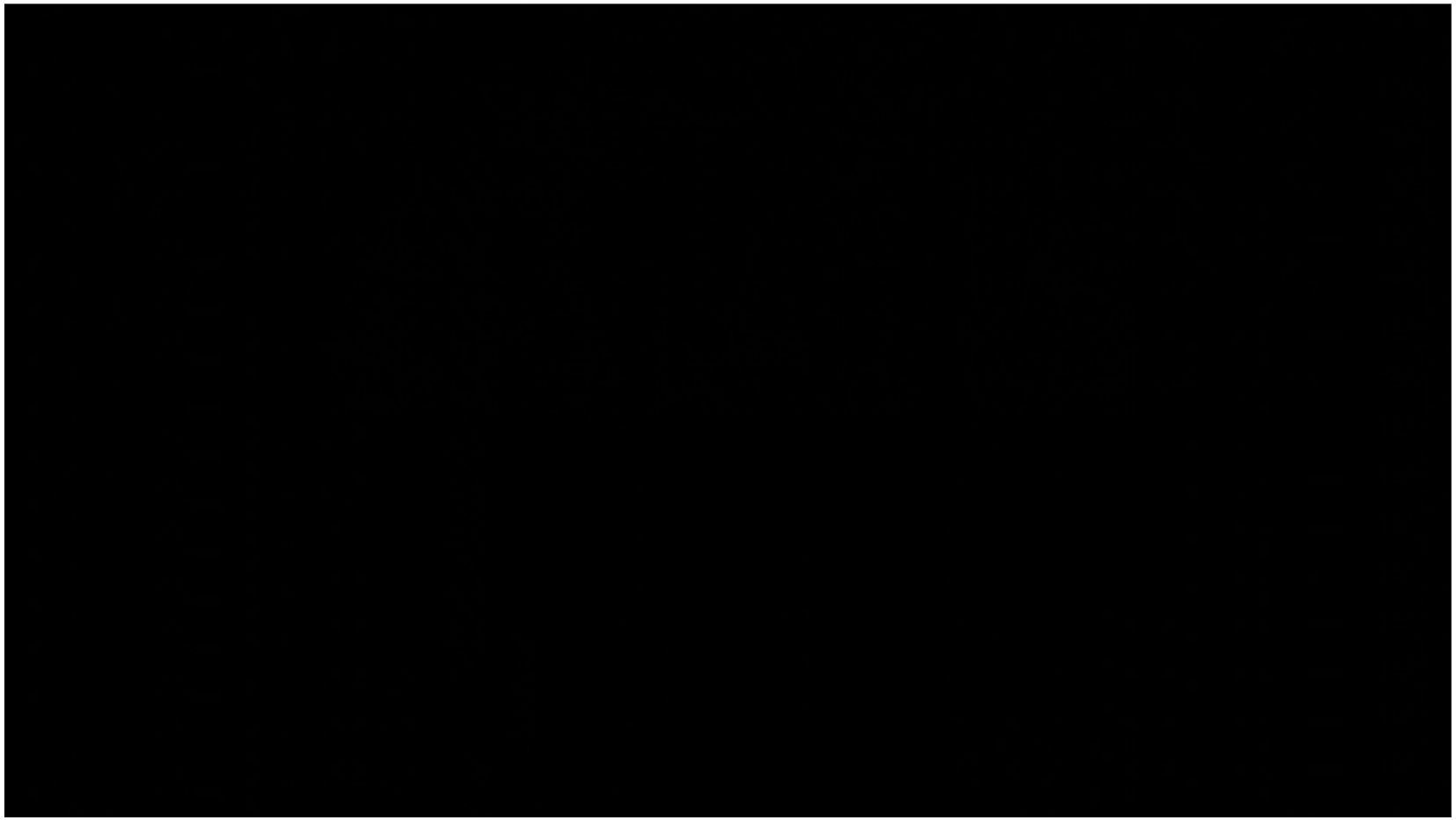
A set of 22 Gaia posters in English in PDF format. High and low resolution versions the first 16 posters are provided (high resolution versions of the first 16 posters be downloaded from

https://gaia.geo.tu-dresden.de/GaiaPoste

The posters, based on the original Gaia posters in Spanish prepared by the team from the University of Barcelona, were translated into English, improved, and technically implemented by the joint tea from ARI/ZAH, University of Heidelberg a Lohrmann Observatory, Technische Universität Dresden


https://youtu.be/qdW53lYXOb

# Gaia Sky Teaser Trailer



Gaia Sky tutorials:

https://odysee.com/@GaiaSky

Gaia Sky Teaser:

**https://t1p.de/godu**

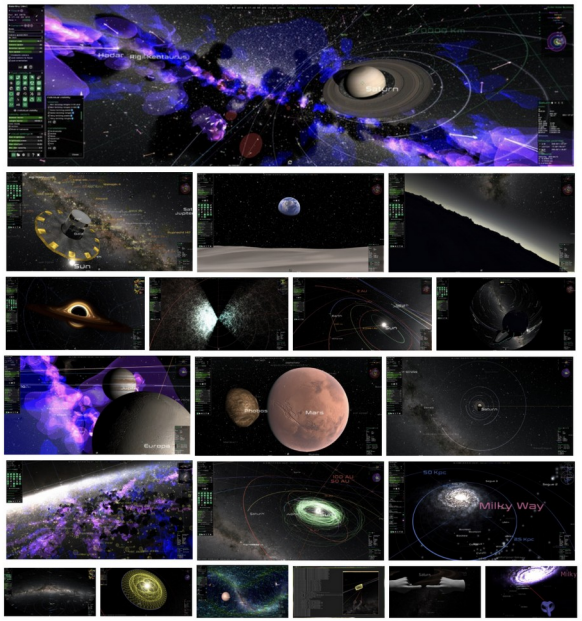
# GAIA SKY

An open source 3D universe simulator with support for more than a billion objects

**Download Gaia Sky 3.0.3**

linux | windows | macos | tgz

release date: 2021-02-25



**Gaia Sky** is a real-time, 3D, astronomy visualisation software that runs on Windows, Linux and macOS. It is developed in the framework of ESA's Gaia mission to chart about 1 billion stars of our Galaxy in the Gaia group of the Astronomisches Rechen-Institut (ZAH, Universität Heidelberg).

- **Free and open source** - Gaia Sky is open and free, and will stay this way. Contribute to the development and translations.
- **From Gaia to the cosmos** - Move freely through the cosmos or explore the Solar System in a seamless manner!
- **Gaia** - Observe Gaia in its orbit and discover its movement in the sky and its attitude.
- **Virtual Reality** - The whole Universe in VR!
- **6D exploration** - Represents star positions but also proper motions and radial velocities, if available.
- **Planetary surfaces** - Explore surfaces with elevation maps (using tessellation, if available).
- **3D-ready** - With 6 stereoscopic modes: Anaglyphic (red-cyan), VR headset, 3DTV (H and V), cross-eye and parallel view.
- **360 mode** - With sperhical (equirectangular), cylindrical and Hammer projections.
- **Planetarium projection mode** - MPCDI for real-time usage in multi-projector systems. Ready to produce videos for full domes from the desktop app.
- **Use your data** - Download pre-packed datasets (Gaia eDR3, NBG, SDSS, OCDR2, etc.) or use your own, in *VOTable*, *FITS*, *CSV* and other formats (*STIL*).
- **Real-time filters** - Filter any dataset by distance, magnitude, galactic, ecliptic, equatorial coordinates, and more.
- **SAMP aware** - Implements SAMP commands to interoperate with SAMP-ready software such as Topcat and Aladin.
- **Navigate the galaxy** - Support for controllers and gamepads makes navigating the Galaxy a piece of cake.
- **Record and play your camera paths** - Ready to record and play camera paths off-the-shelf.
- **Scriptable and extensible** - Use Python to script and extend the capabilities of the Gaia Sky.
- **Internationalised** - Translated so far to English, German, Spanish, French, Catalan and Slovenian.

(http://www.zah.uni-heidelberg.de/gaia/outreach/gai

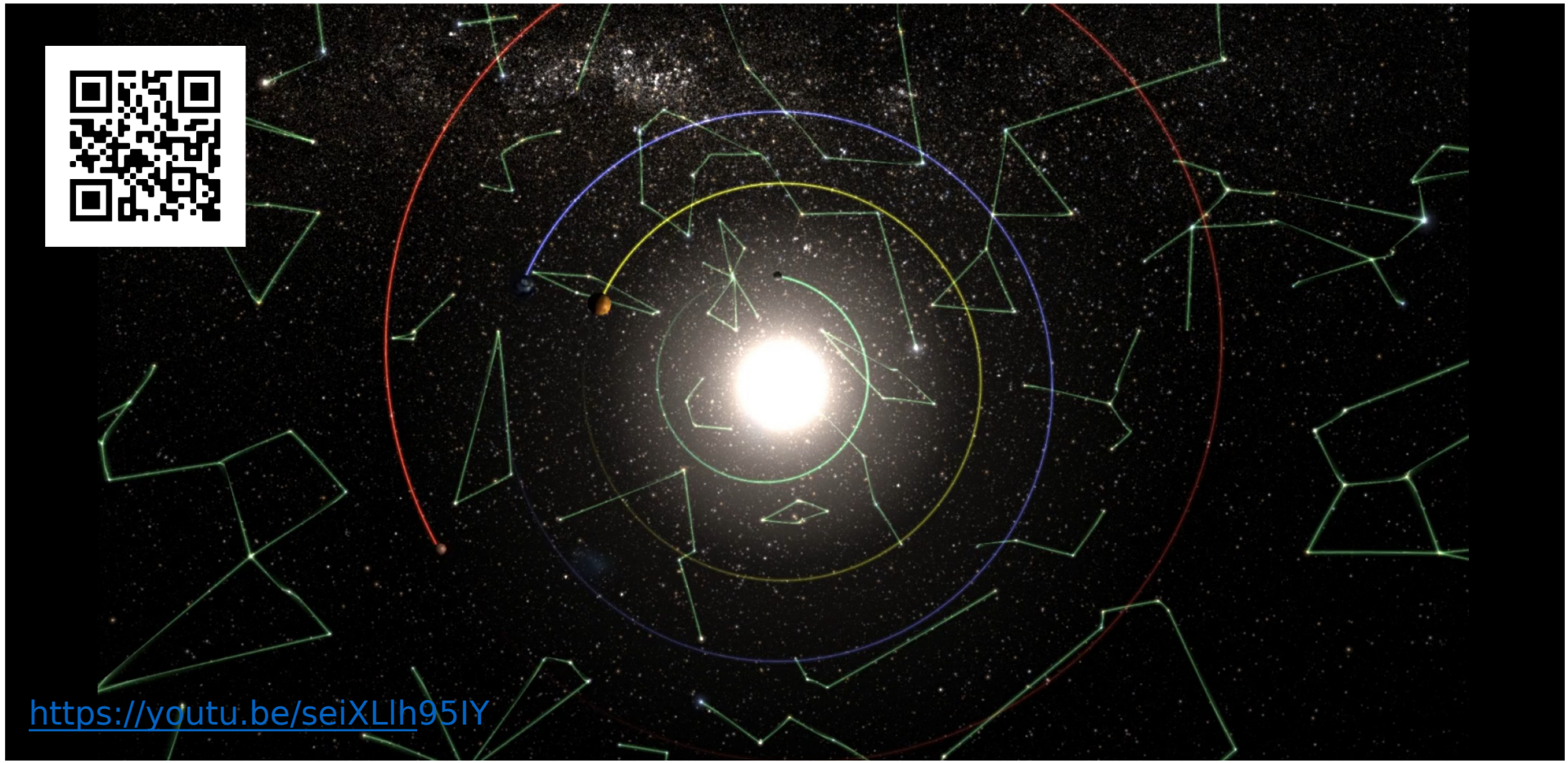

*Nobel Prize Laureate George Smoot*

ESA Astronaut (SpaceX Crew-3) Matthias M

# Flying through the Galaxy with Gaia Sky

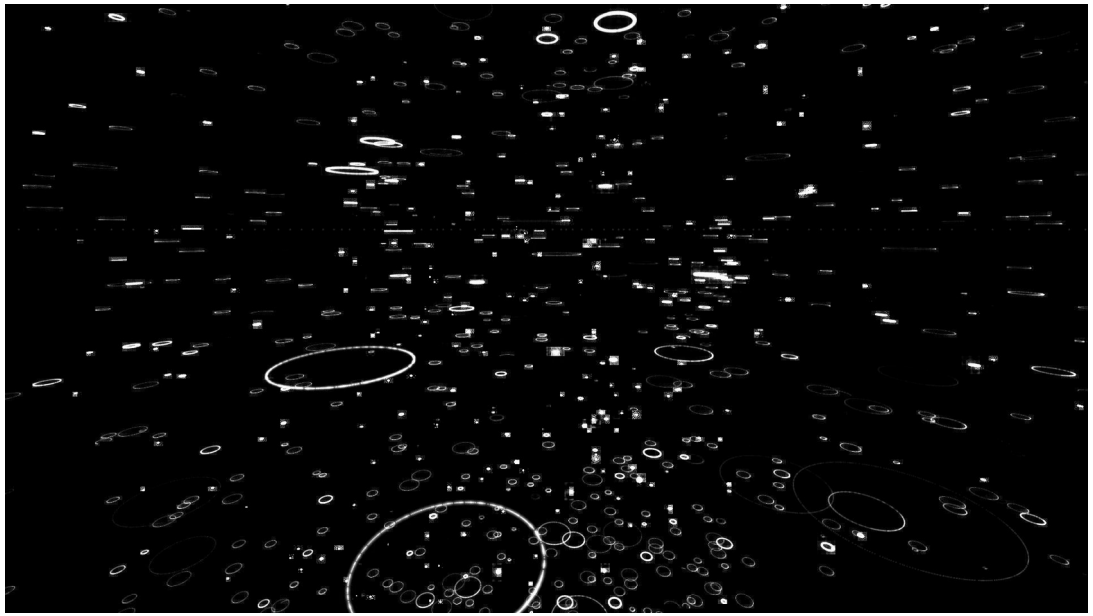
http://www.zah.uni-heidelberg.de/gaia/outreach/gaiasky

# Video where we assume that the parallax are 100 000 times larger than in reality

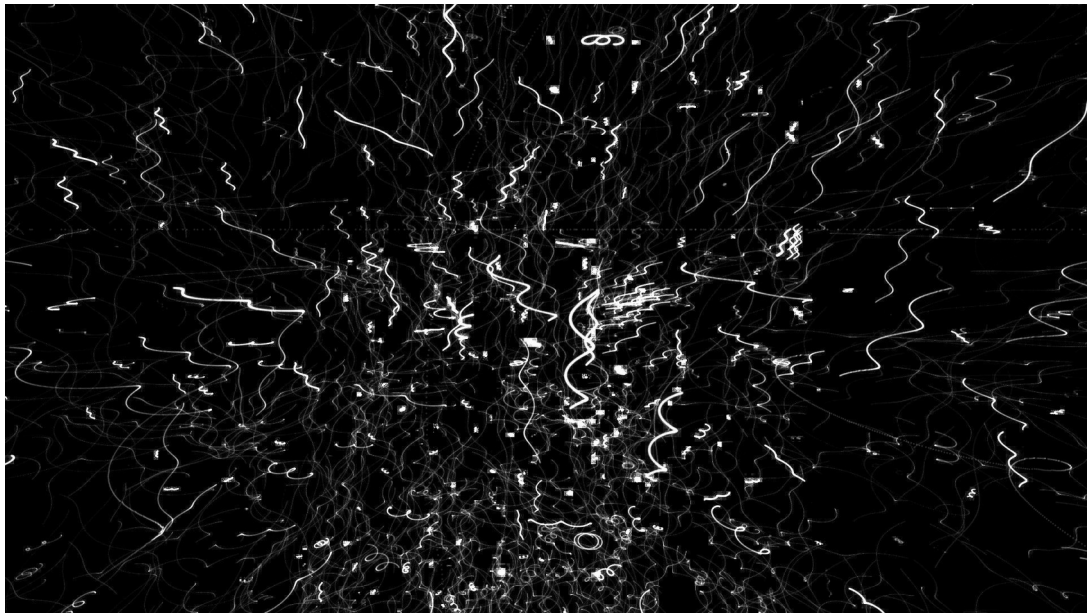


# Video where we assume that the parallaxes are 100 000 larger than in reality

“Long exposures“



without proper motion, just parallax

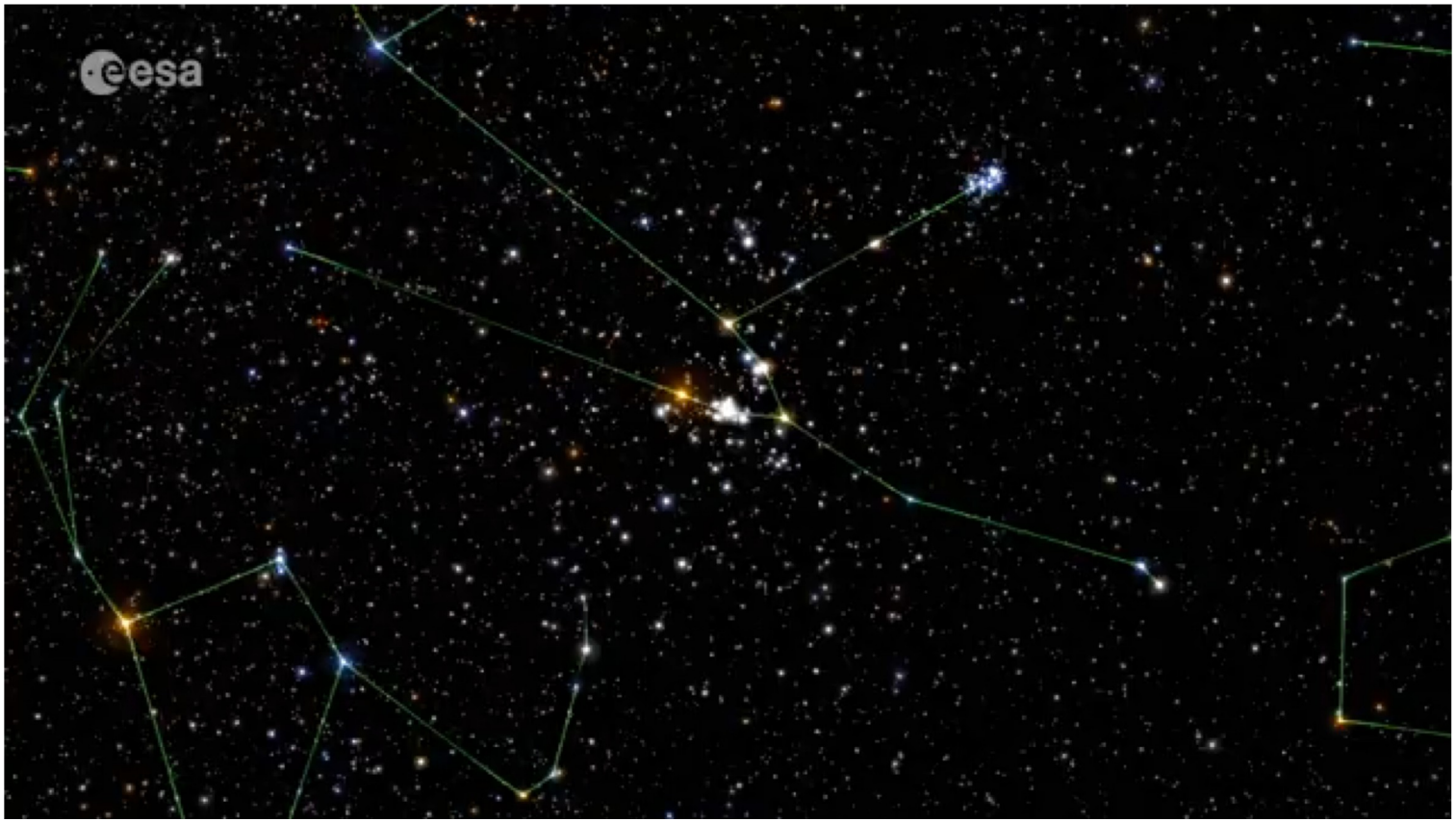


parallax + proper motion

https://youtu.be/seiXLlh95IY

# Gaia Sky Videos Showing Gaia EDR3 Scienc

Example: Locating the Hyades tidal tails (more than 100 000 views)
https://youtu.be/dn2Qdrz9JDo




More Gaia Sky videos can be found on
**https://t1p.de/nyyu**

If you want to view the newest Gaia videos, subscribe to our **YouTube channels**

Stefan Jordan: https://www.youtube.com/channel/UCaQGWvf5PvJ-AMJ

Gaia Sky/Toni Sagristà: https://www.youtube.com/user/toninoni

Follow Stefan Jordan on Twitter: https://twitter.com/StefanJordanARI

# (Unpaid) Offer

- We do not have anyone to manage DPAC Gaia Outreach for Schools
- Is there anyone interested to manage this, alone or in a small team?
- Of course there would be (non-financial) support by the outreach team .
- If you are interested, please write an Email to
  - Stefan Jordan (jordan@ari.uni-heidelberg) and
  - Eduard Masana (emasana@fqa.ub.edu).