

Stellar distances and our neighbourhood

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What's the nearest?



And here?



Let's add some colour - RGB



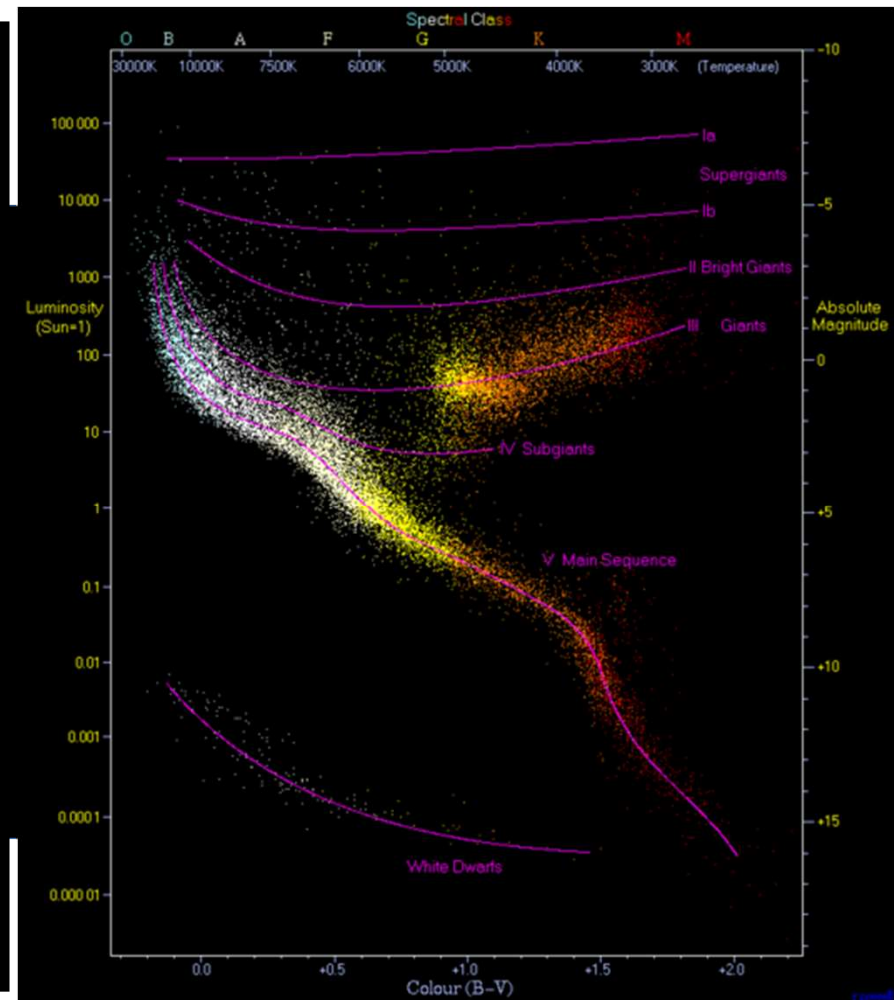
Stars and colours

Colour \Rightarrow Temperature

Red = Cold

Yellow = Avg. (*Sun*)

White = Hot



So with some colours



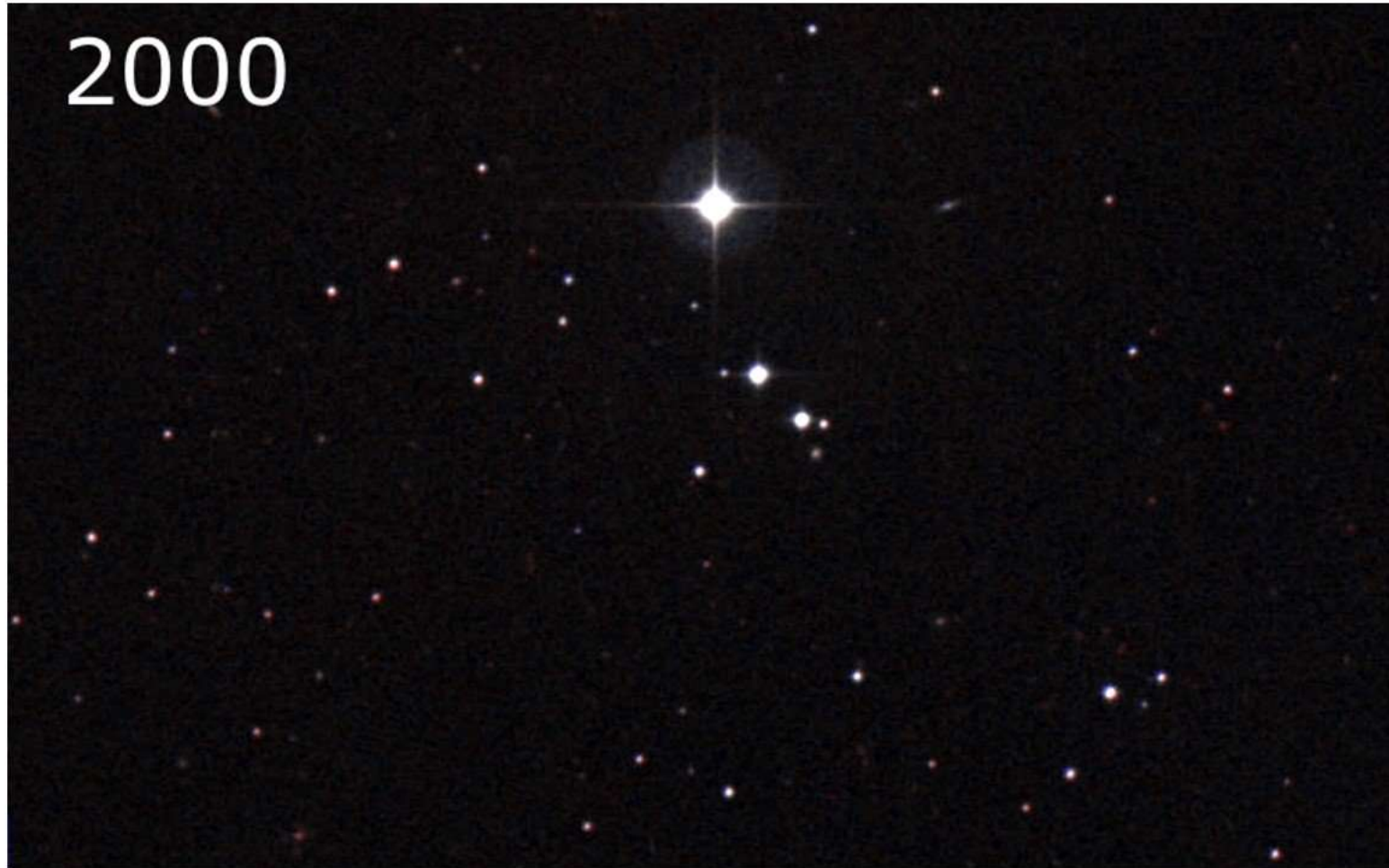
“E pur si muove”

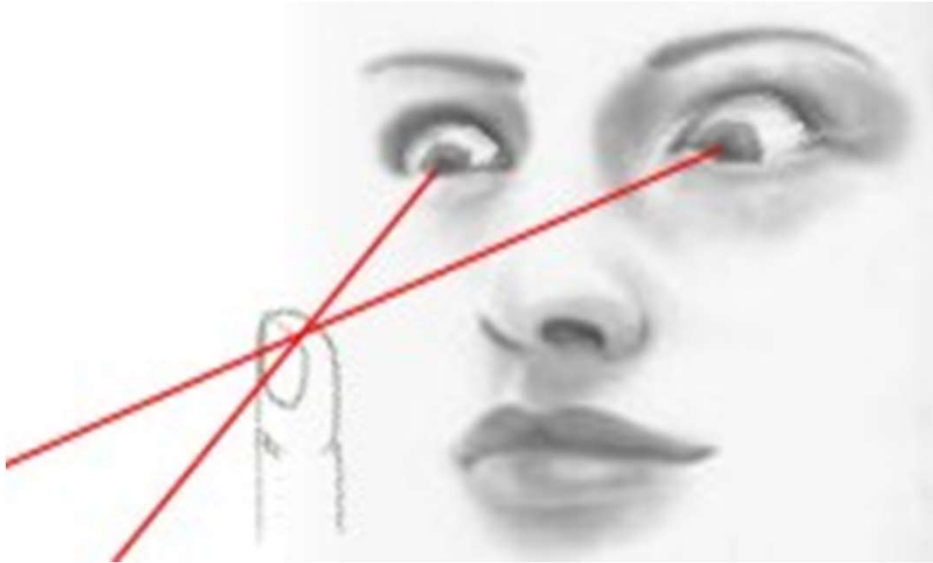


“E pur si muove”



“E pur si muove”



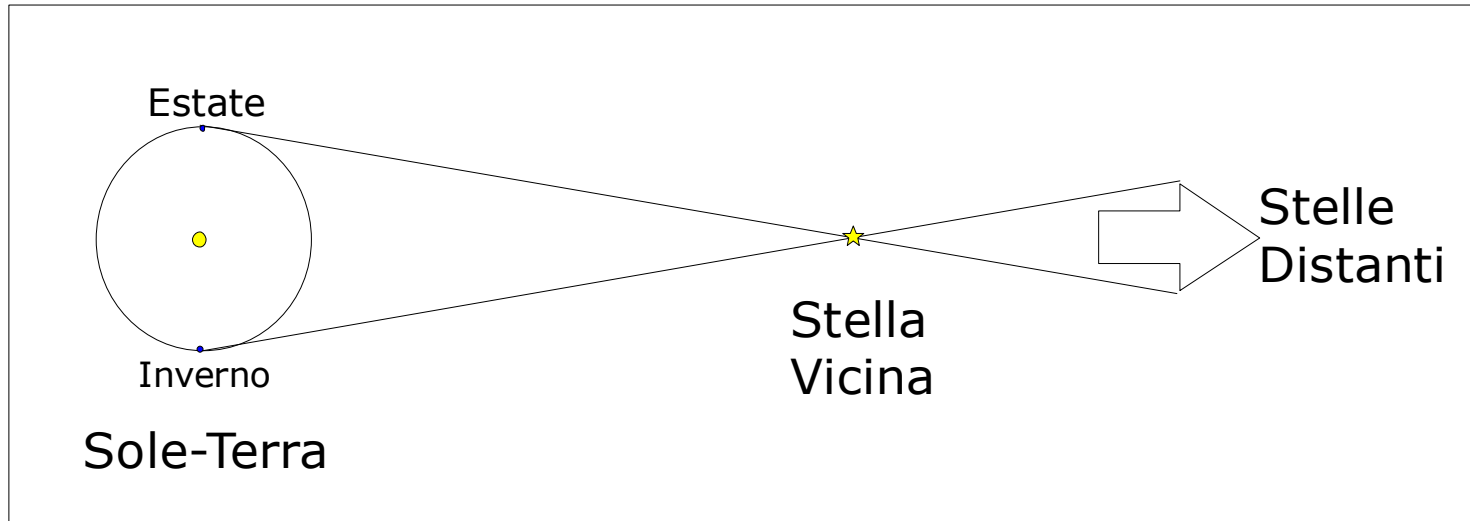


- Close the left eye
- Put your finger about 25 cm from your eyes in front of a distant object
- Open and close the right and left eye
- What does your finger do?
- Move finger closer, repeat.

In reverse



Parallaxes from the Earth



Observe in the summer

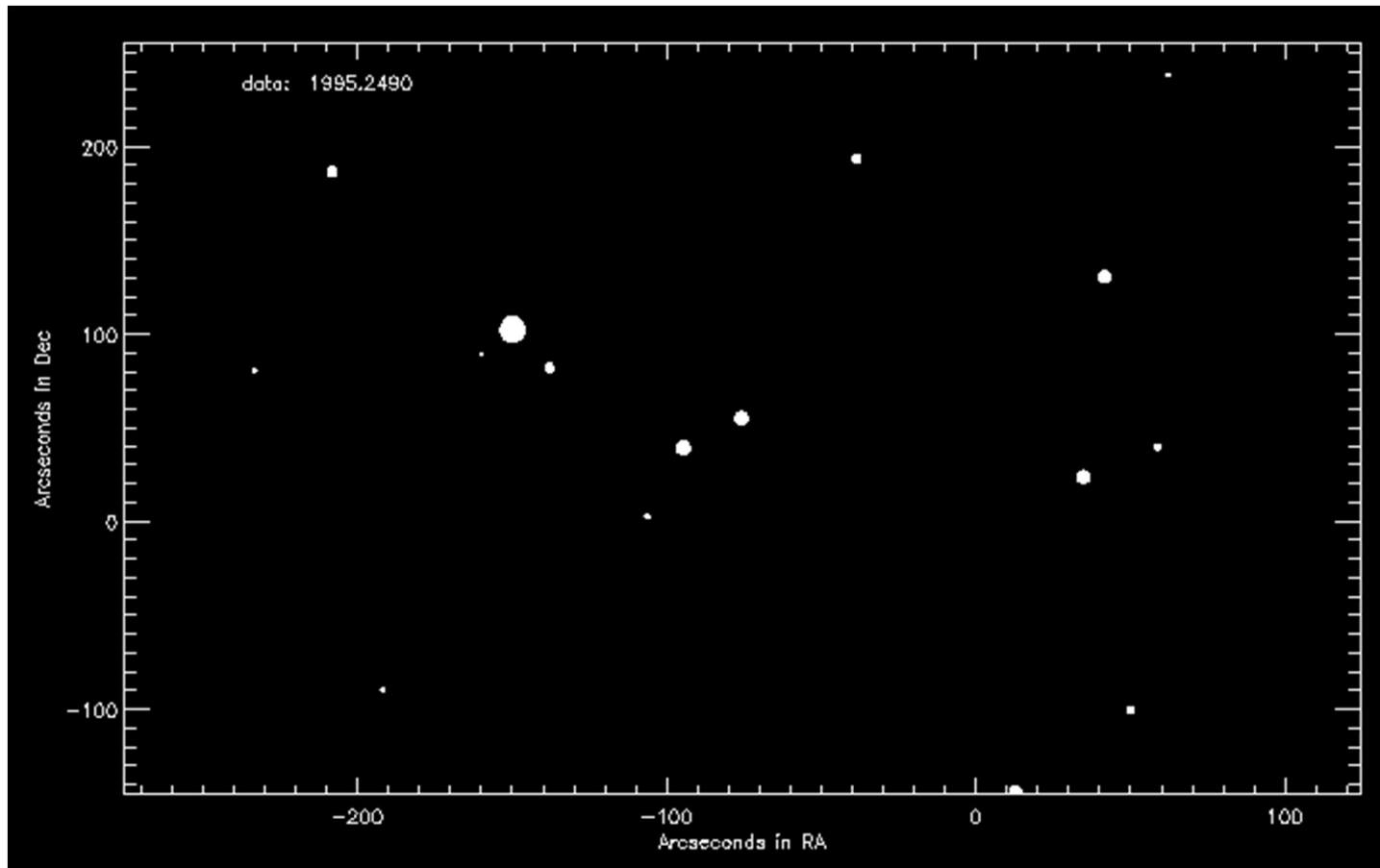
Observe in the winter

The “motion” is due to it’s parallax.

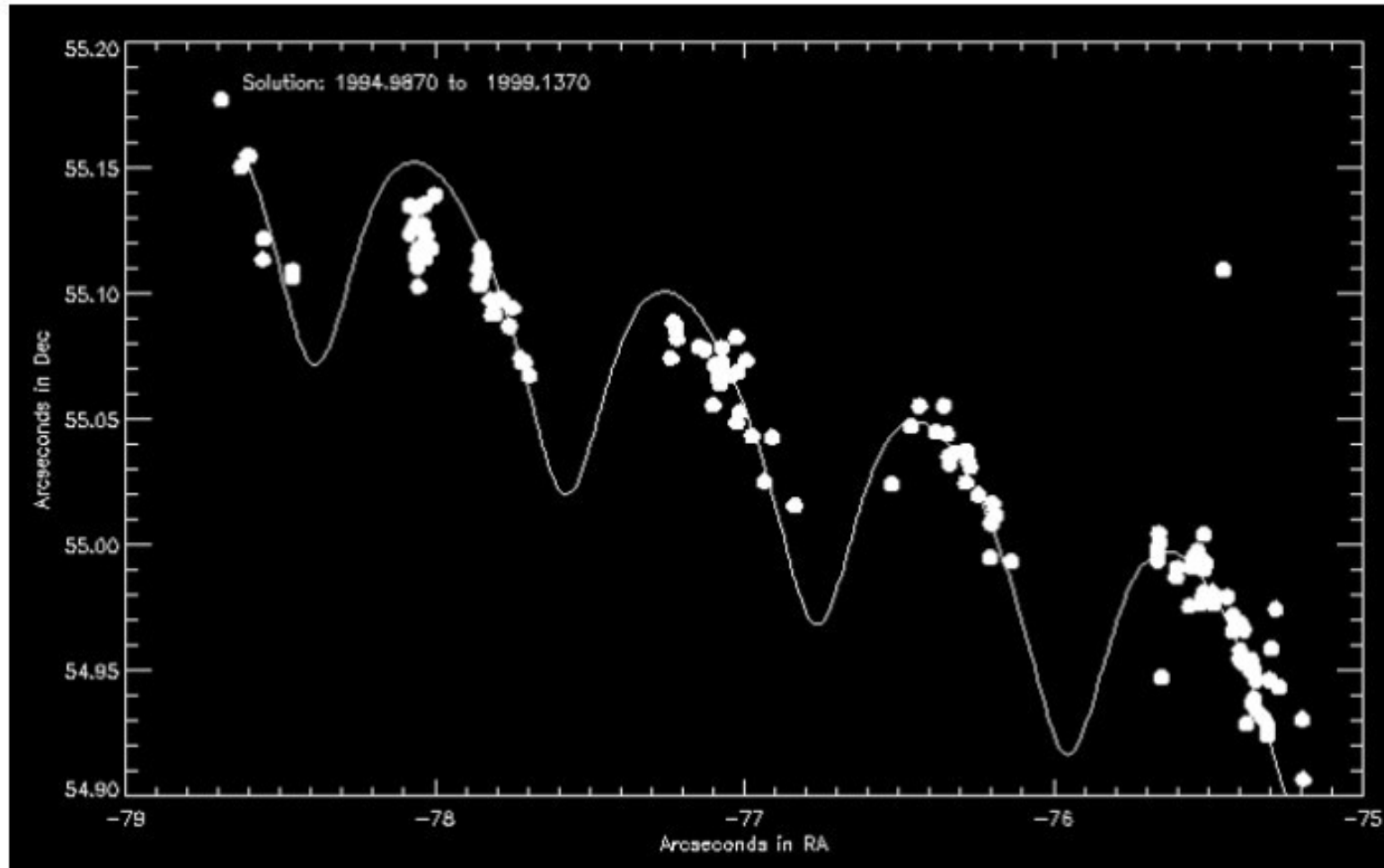
An example LHS2632



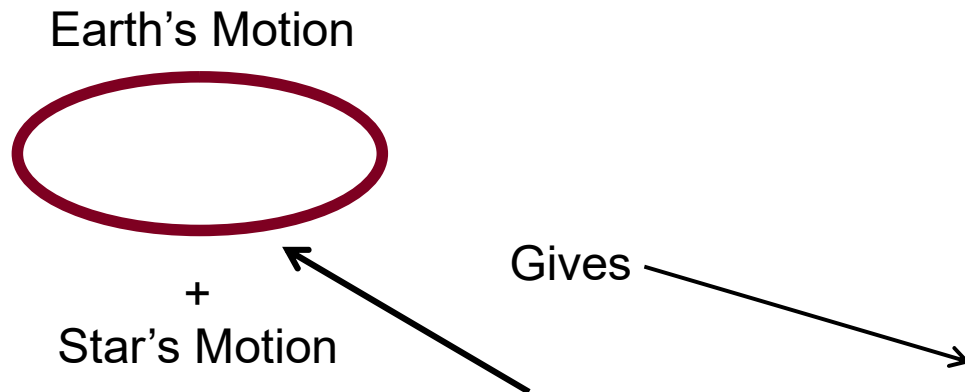
An example LHS2632



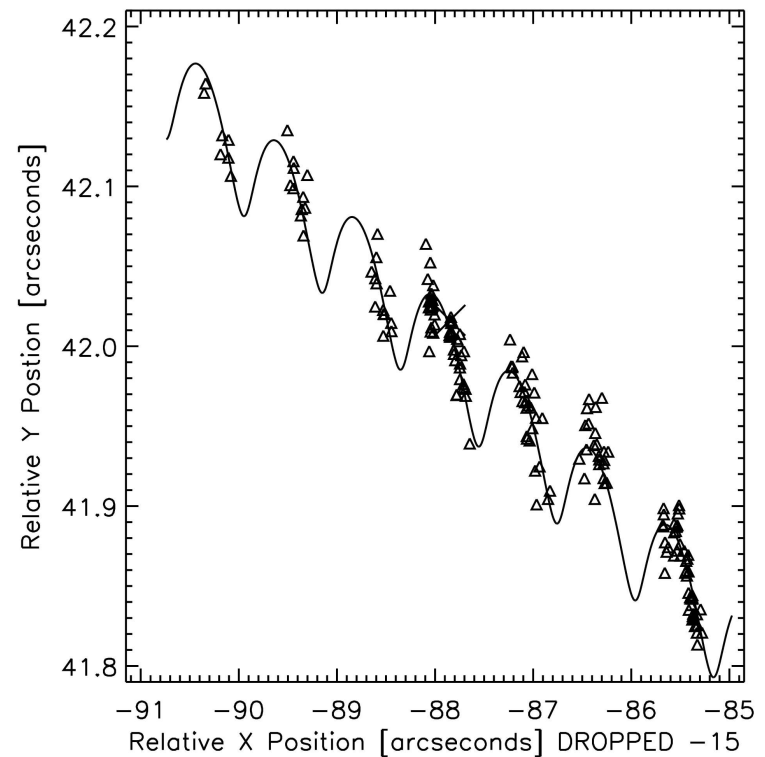
Zoom



Earth's motion plus star's motion in the sky



Smart 20+ yrs	~ 200
All @ 1994	~ 6000
Hipparcos @ 1994	~ 1.2×10^5
Gaia/TYCHO @ 2016	~ 2.1×10^6
Gaia @ 2018	~ 1.3×10^9
Gaia @ 2020	~ 1.4×10^9



Gaia

To measure positions, proper motions,
parallaxes and colors of 1% of our Galaxy

400+ Data Processing Scientists
100s ESA/Industry Engineers

The Launch of Gaia

http://www.esa.int/ESA_Multimedia/Videos/2013/12/Gaia_launch_replay_highlights

The stories of Gaia

Timelapse film Soyuz flight VS06, with Gaia

<https://www.youtube.com/watch?v=GidVVgTEfJg>

Inside Gaia's billion-pixel camera

<https://www.youtube.com/watch?v=bbfb8VhH7L0>

Gaia scanning the sky

<https://www.youtube.com/watch?v=BnFyzZGWuYs>

GAIA EARLY DATA RELEASE 3



1 811 709 771
stellar positions

1 806 254 432
brightness
in white light

1 542 033 472
brightness
in blue light

1 540 770 489
colour

1 467 744 818
parallax and
proper motions

1 614 173
extragalactic
sources

1 554 997 939
brightness
in red light

[#SpaceCare](#) [#ExploreFarther](#)



Gaia Catalogue of Nearby Stars - Orbits

Gaia Early Data Release 3 Gaia Catalogue of Nearby Stars - Orbits

<https://youtu.be/k9pHGhNtyPk>

While I have been speaking Gaia
made 2 million measurements.

This is not the end ...
... things are just beginning

Gaia Catalogue of Nearby Stars - fly-through

Gaia Early Data Release 3
Gaia Catalogue of Nearby Stars - fly-through

<https://youtu.be/bzQUNCleS3o>

More Info

EDR3 <https://www.cosmos.esa.int/web/gaia/edr3-questions-answers>

Videos <https://www.youtube.com/watch?v=bzQUNClE3o>

https://youtu.be/Go0llcS_IUo

https://youtu.be/_XH8eJHTnDA

<https://youtu.be/LQM0D9ZH3zg>

Poster <https://www.cosmos.esa.int/web/gaia/edr3-gcns>

App <https://gruze.org/fly/>

Example https://gruze.org/fly/?s=tour_of_density_groups

Website: <https://gucds.inaf.it/projects/gcns/>