

HW 2,

Query Gaia DR2 for stars with

$$\text{parallax} > 100 \text{ mas} = \text{dist} < 10 \text{ pc}$$

$$g \text{ mag} < 15$$

1) there are 280 such stars. Note that one has a missing (BP - RP) color value, so only 279 can be plotted

2) see graph

3) of the 279 stars on graph

16 lie in WD region

$$16/279 = 6\%$$

1 lies above MS

in giant region

$$1/279 = 0.04\%$$

262 lie in MS region

$$262/279 = 94\%$$

4) Query for stars with

$$\text{parallax} > 40 = \text{dist} < 25 \text{ pc}$$

$$g \text{ mag} < 17$$

There are 4829 such stars

- 80 with missing (BP - RP)

4749 good stars for analysis

See graphs for two ways to check for uniform dist:

a) graph of # of stars in 1-pc-thick shells. This ought to increase like volume of shell, $\propto r^2$. It is close

b) graph of # of stars in sphere of radius r . This ought to increase like volume of sphere, $\propto r^3$. The data fall off the model slightly at large r ...

HW 2

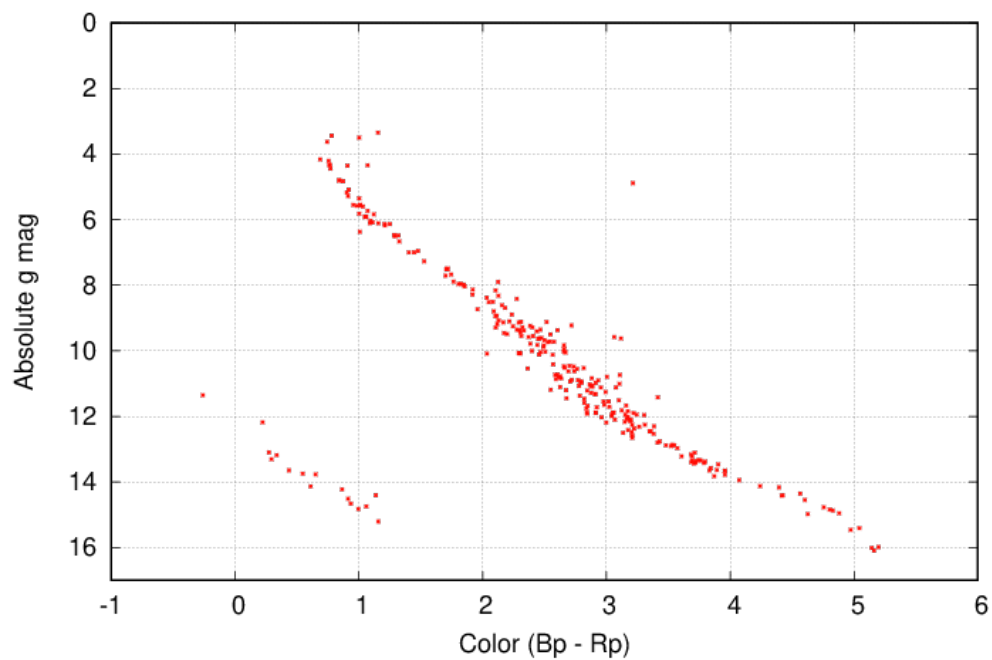
4, continued)

So, is the distribution of stars really uniform?

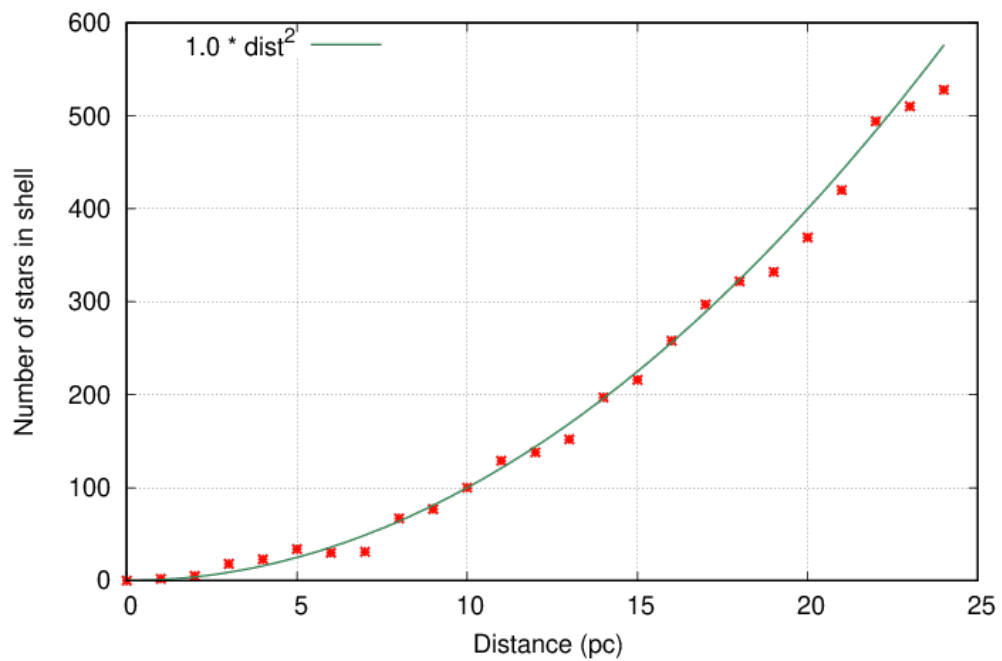
The answer appears to be "mostly", but there's a small deficit of stars at the largest distances.

For a better answer, see our next homework set.

Gaia DR2, stars with $g < 15$ and parallax > 100 mas



Gaia DR2, stars within 1-pc shells centered on Sun



Gaia DR2, cumulative stars within spheres centered on Sun

