The kinematic trace of the galactic bar(s) in the gaia sphere

Mercè romero-gómez (iccub-ieec)

collaborators: L. Aguilar (unam), T. Antoja (Kapteyn), F. Figueras (iccub-ieec)

Mon. Not. R. Astron. Soc. 000, 000–000 (0000) Printed 23 January 2013 (MN LATEX style file v2.2)

Large scale kinematics to disentangle the Milky Way bar(s)

M. Romero-Gómez[1], et al.

[1]*Dept. d'Astronomia i Meteorologia, Institut de Ciències del Cosmos (ICC), Universitat de Barcelona (IEEC-UB), Martí i Franquès 1, E08028 Barc*

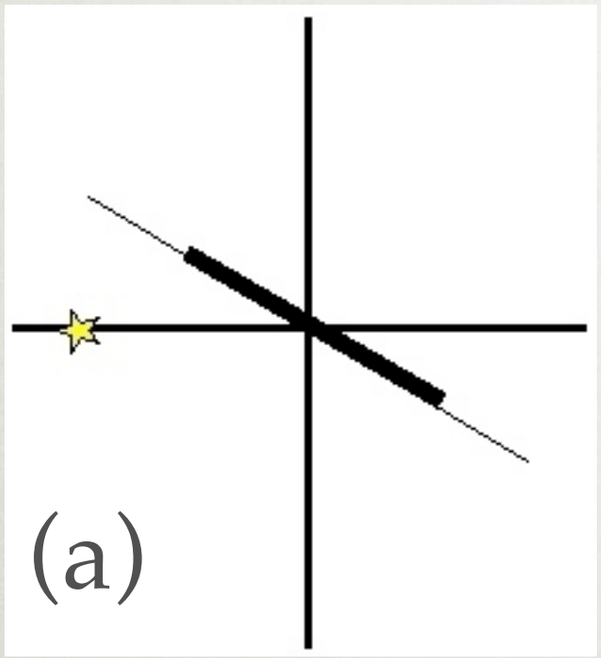
Received

ABSTRACT

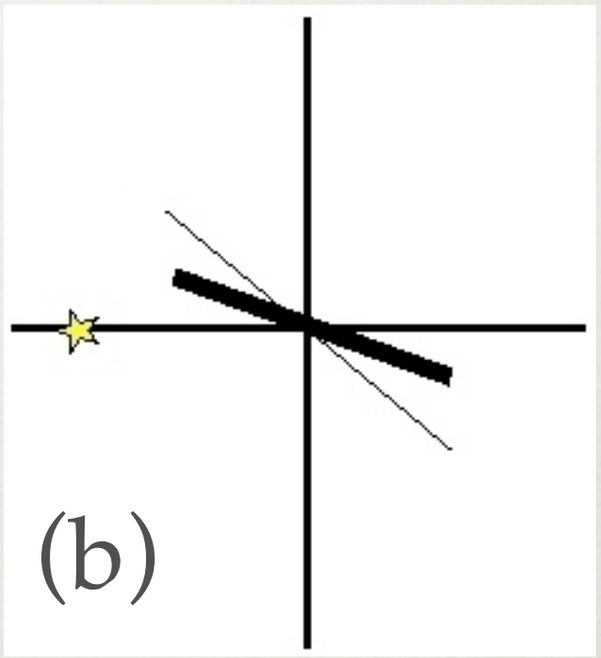
Test-particle simulations

- 20x10^6 particles with $\sigma_U(R_\odot) = 30\,km/s$
- Relaxed in Allen & Santillán (1991) axisymmetric potential
- Introduction of the non-axisymmetric component in 4T (adiabatic) rotations and integrated during another 4T to allow relaxation.

Can Gaia disentangle the galactic bar(s)?



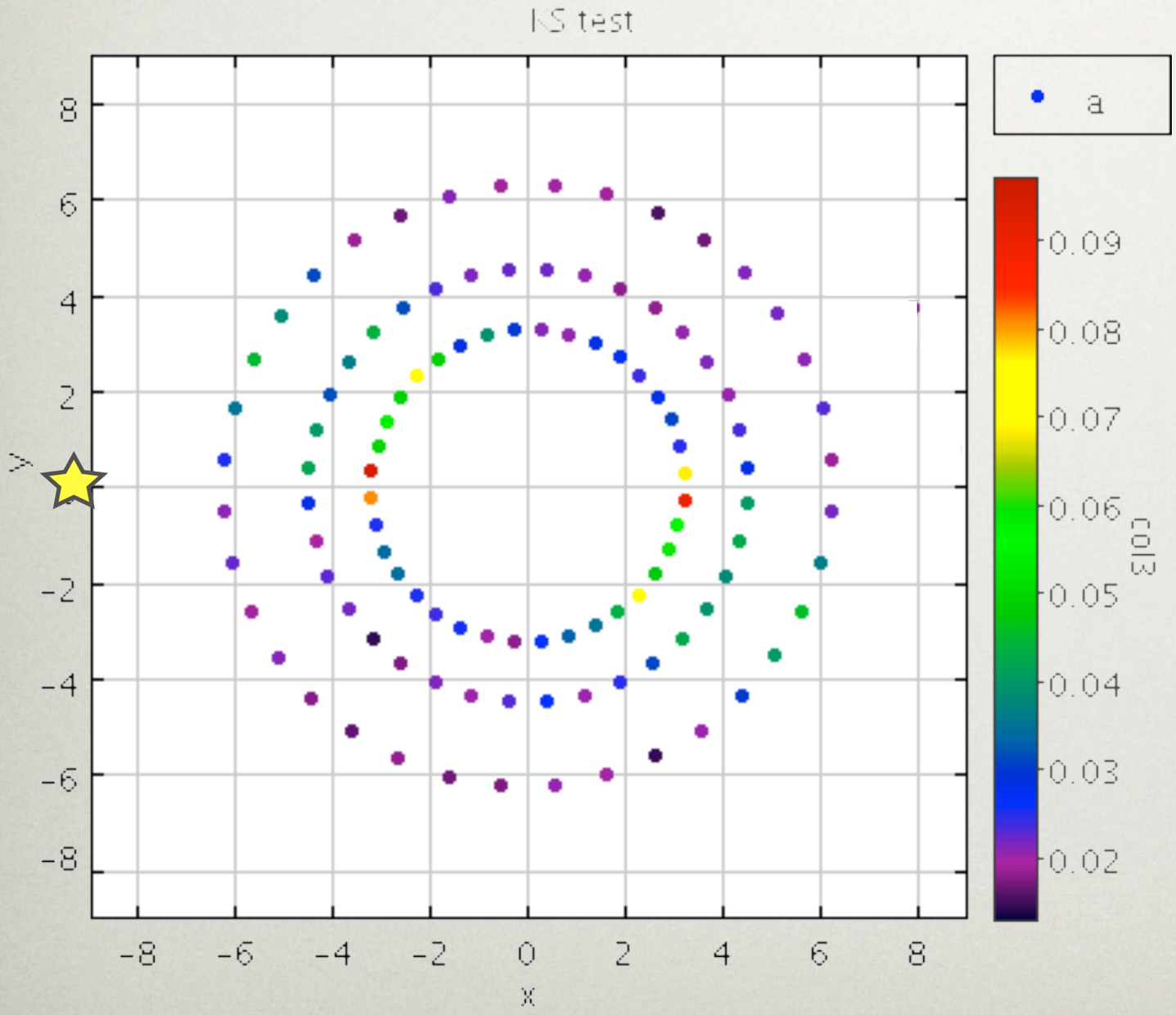
Galactic bar and long bar aligned



Galactic bar and long bar 20º of angular separation

Where are the differences?

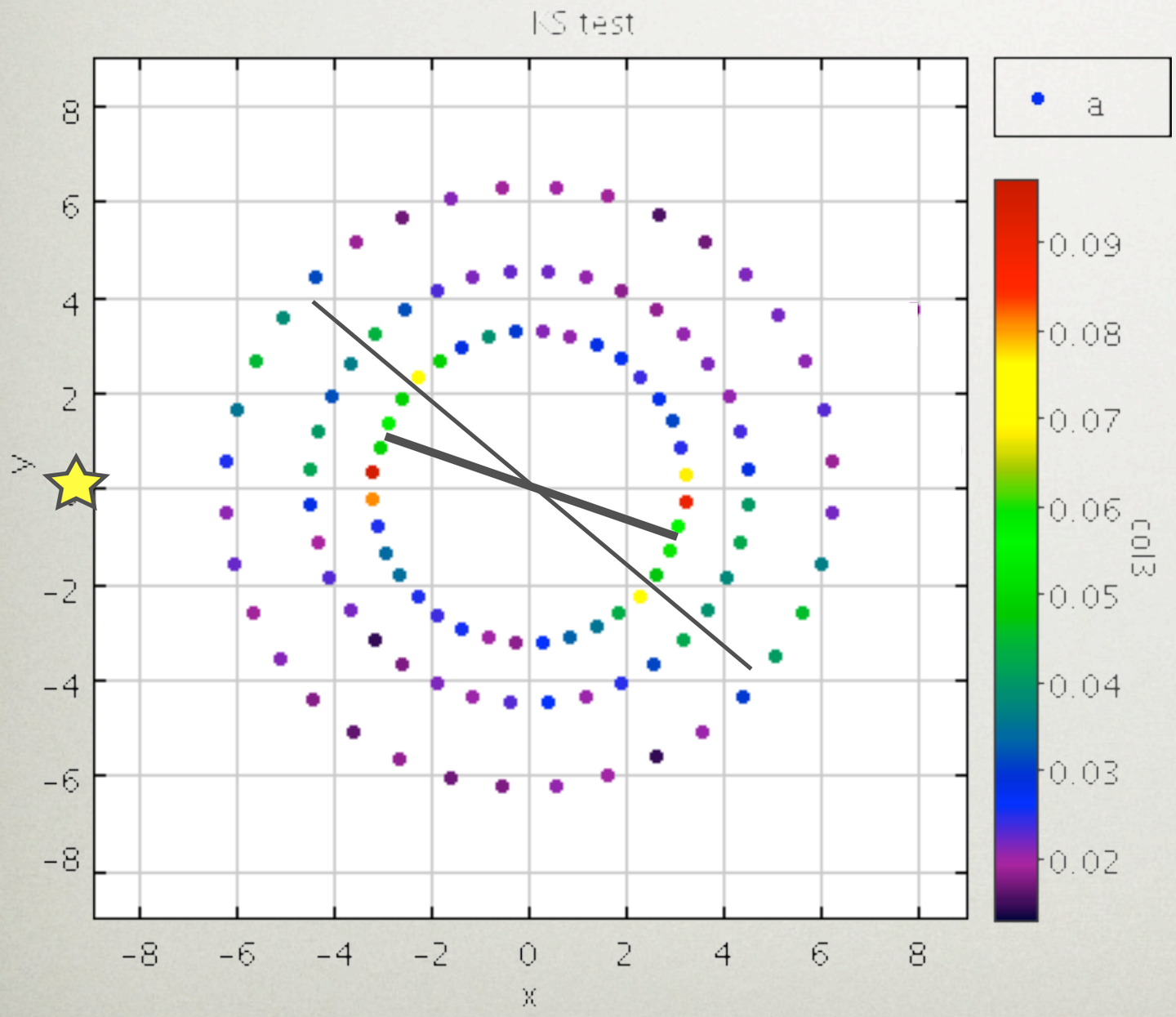
KS test



- KS: The two dimensional KS statistic is taken to be the maximum difference of the integrated probabilities.

Where are the differences?

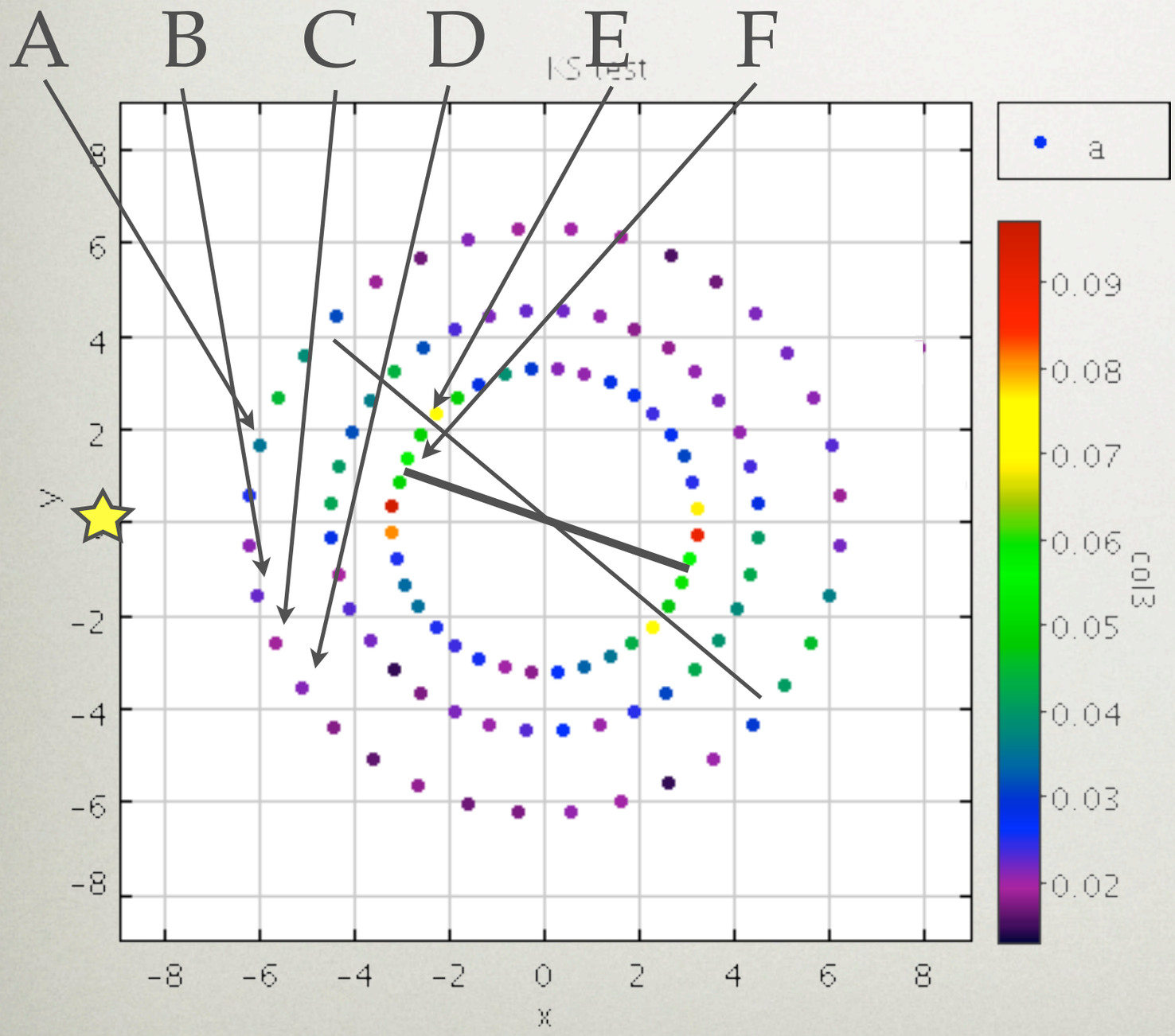
KS test



- KS: The two dimensional KS statistic is taken to be the maximum difference of the integrated probabilities.

Where are the differences?

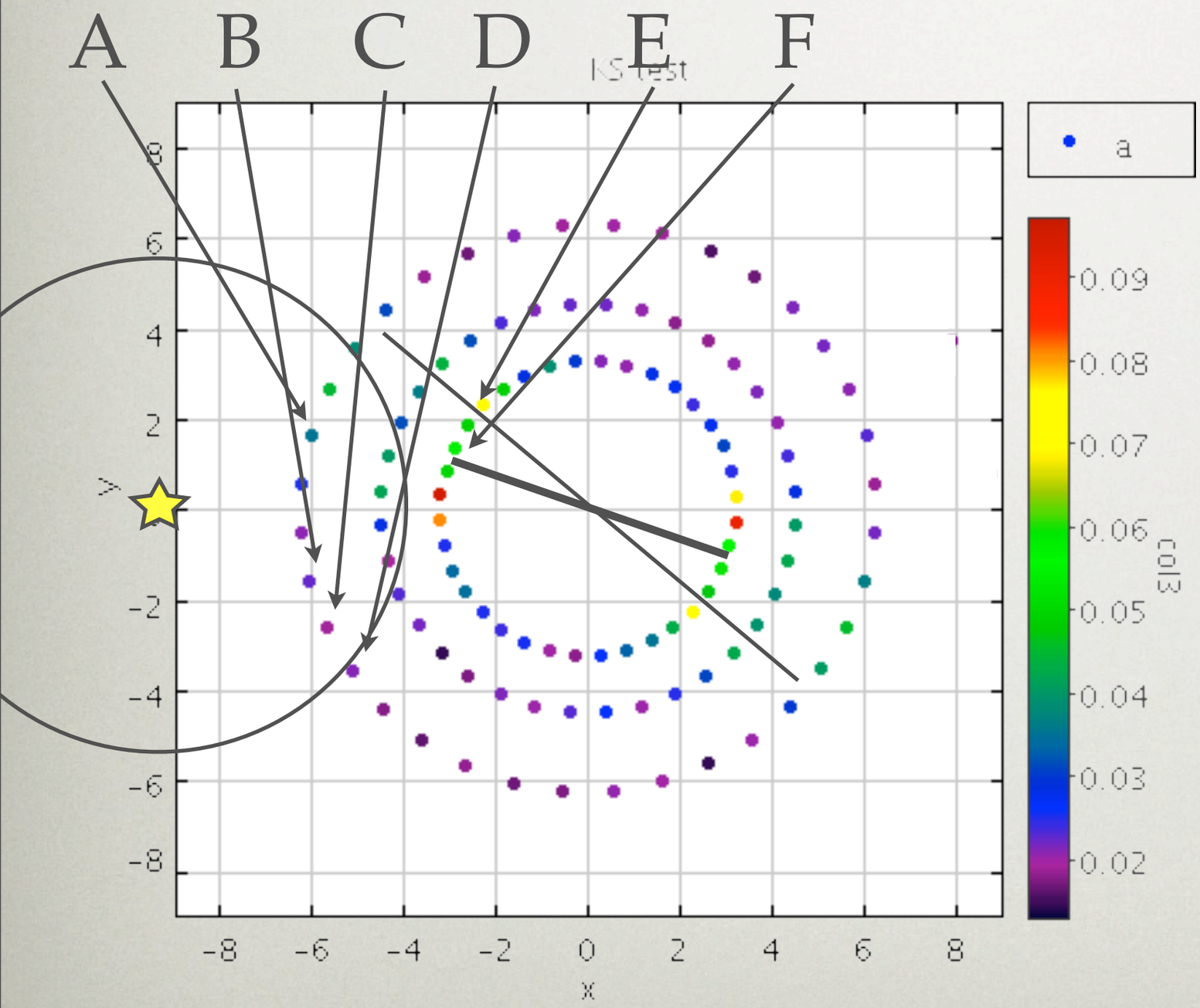
KS test



- KS: The two dimensional KS statistic is taken to be the maximum difference of the integrated probabilities.

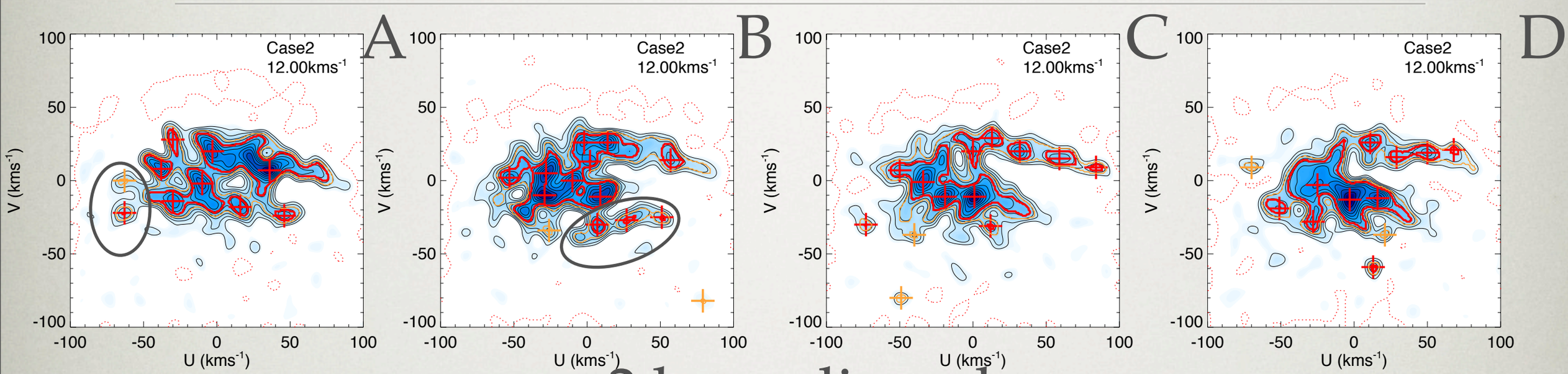
Where are the differences?

KS test



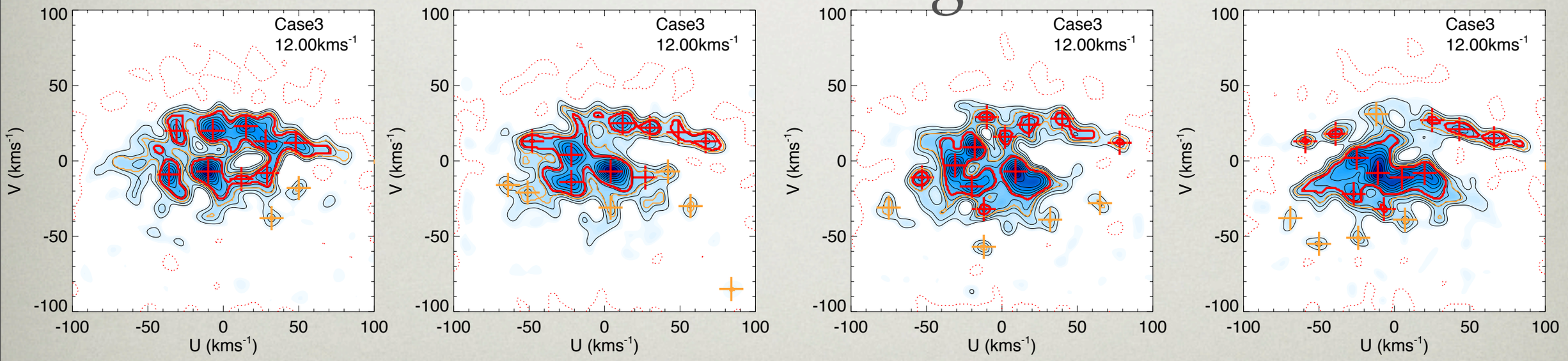
- KS: The two dimensional KS statistic is taken to be the maximum difference of the integrated probabilities.

WAVELET: (U,V) PLANE



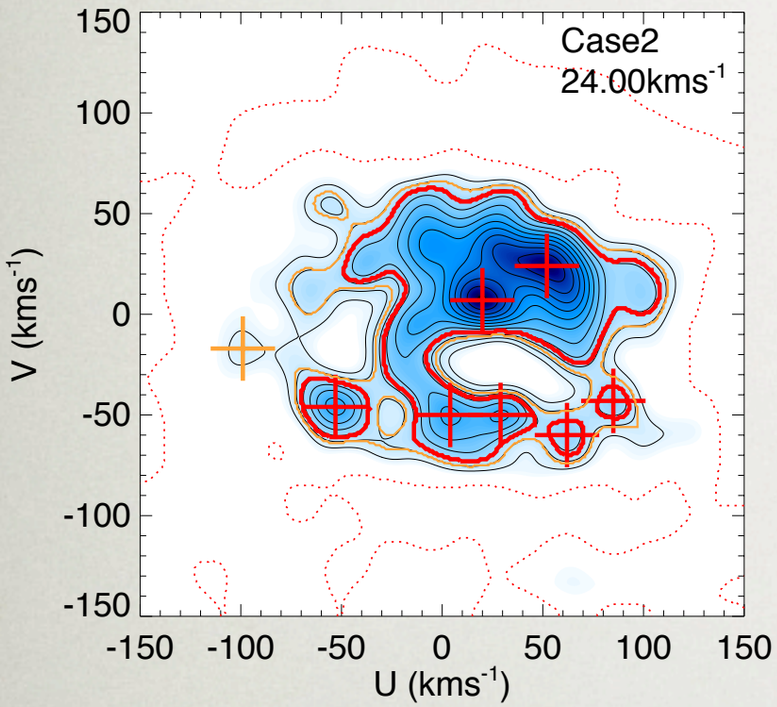
2 bars aligned

2 bars misaligned

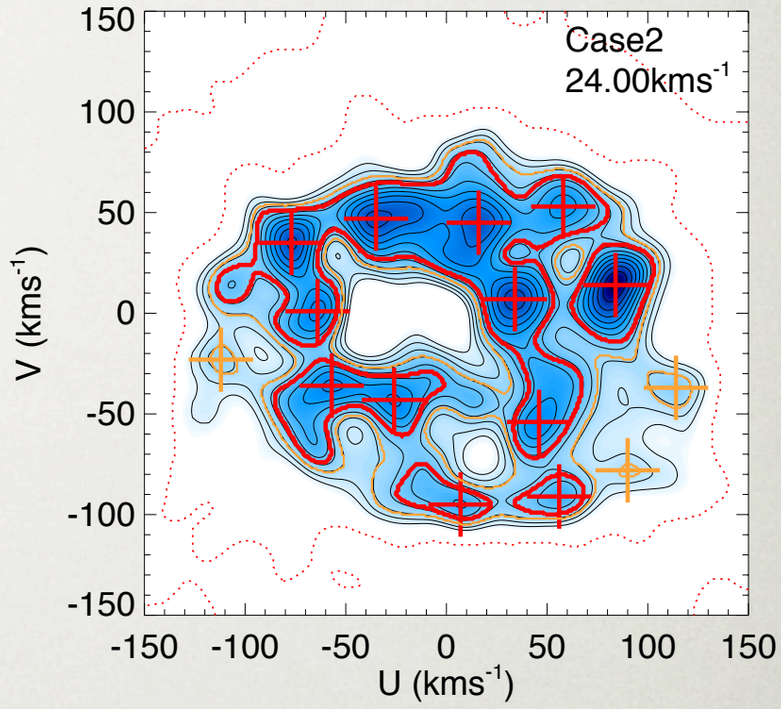


WAVELET: (U,V) PLANE

E

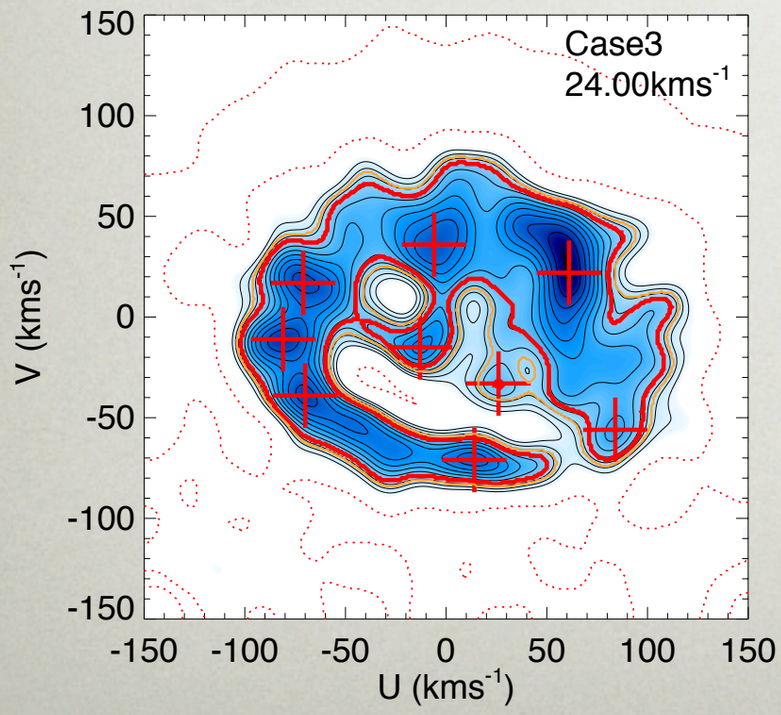


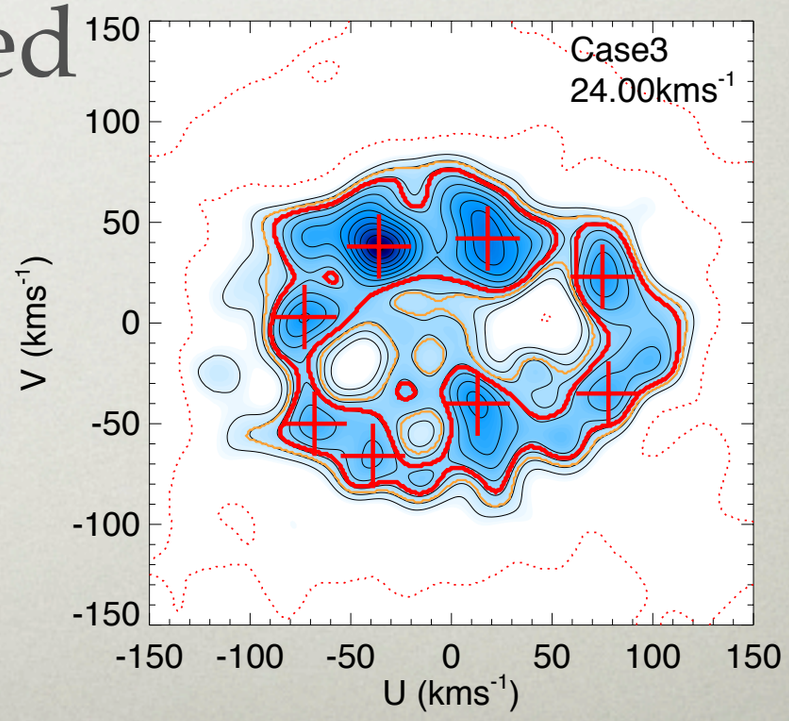
F



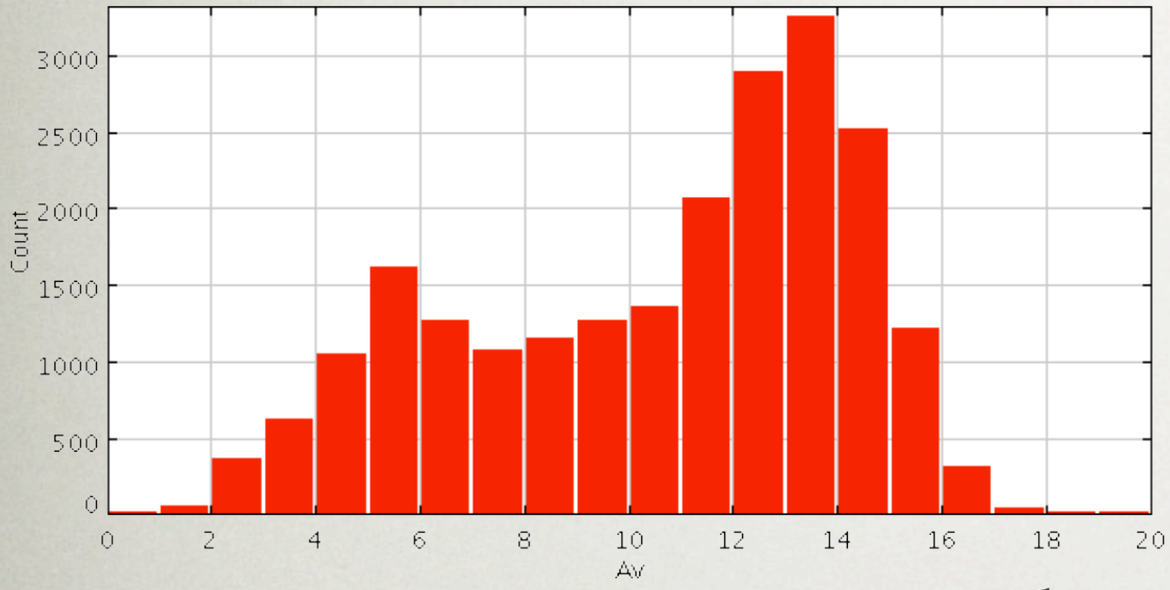
2 bars aligned

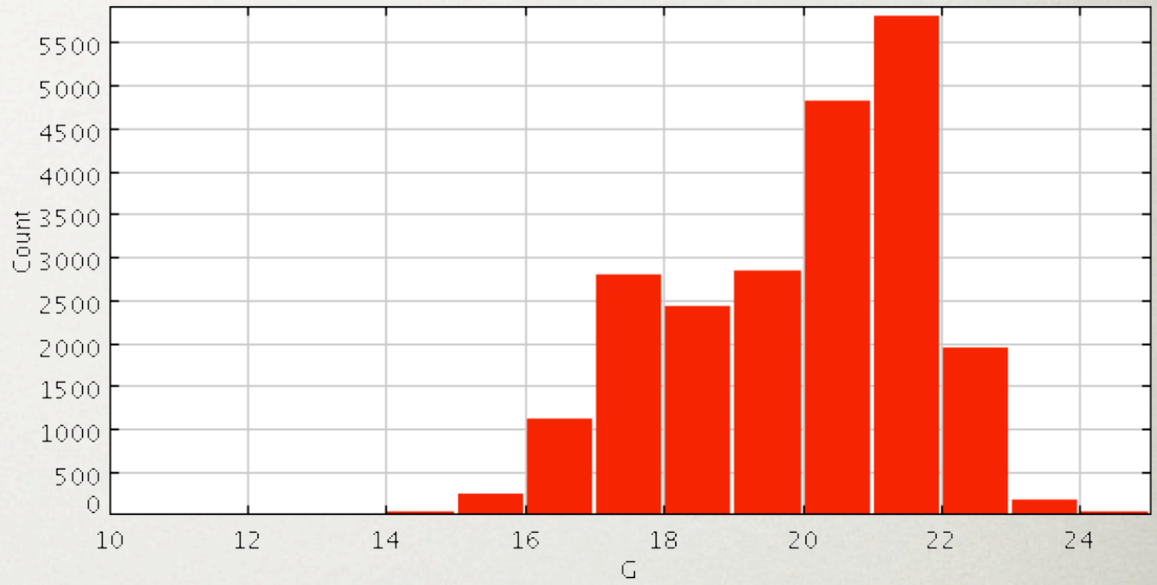
2 bars misaligned





The region E



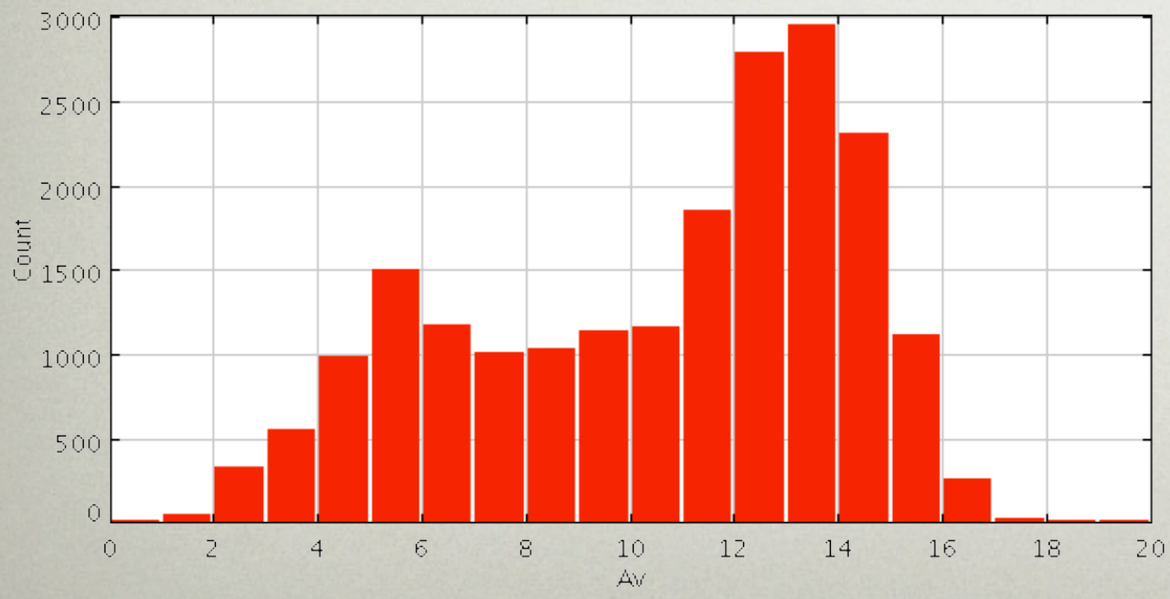


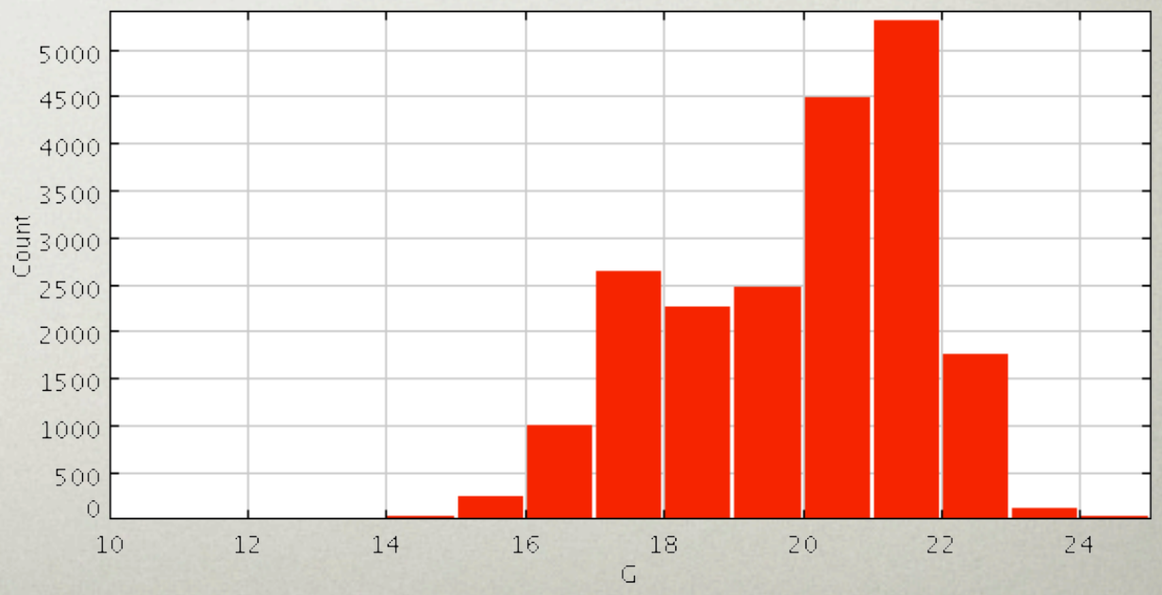
Av

2 bars aligned

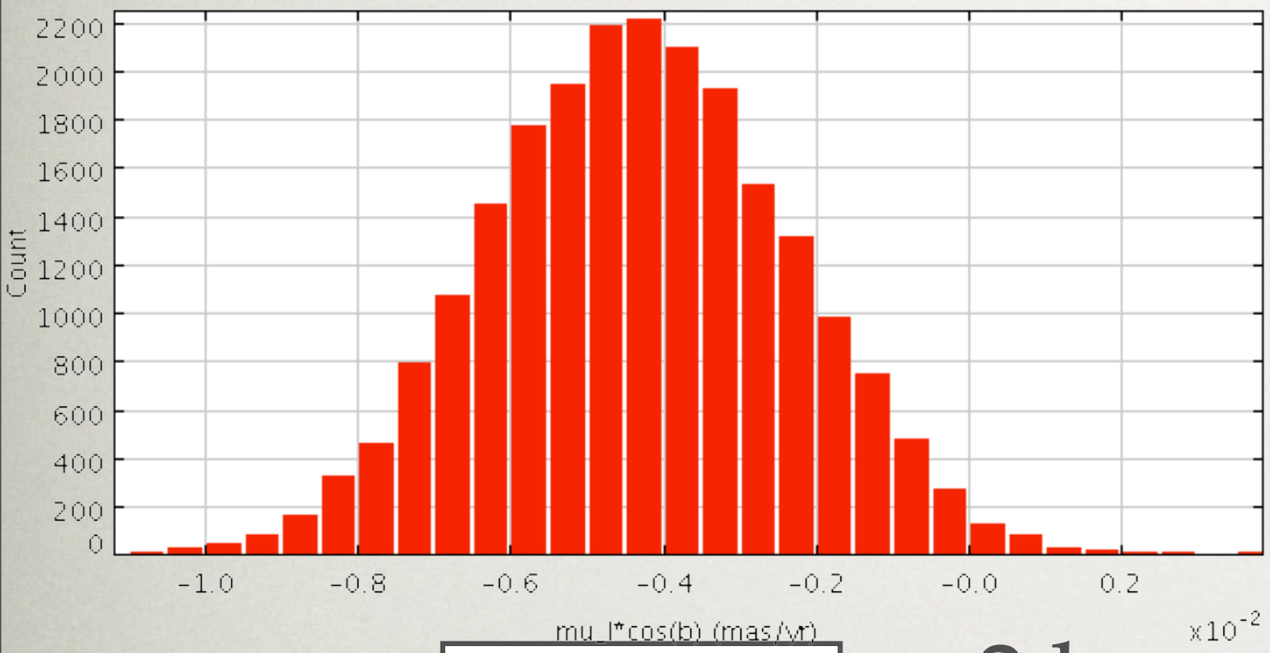
2 bars misaligned

G

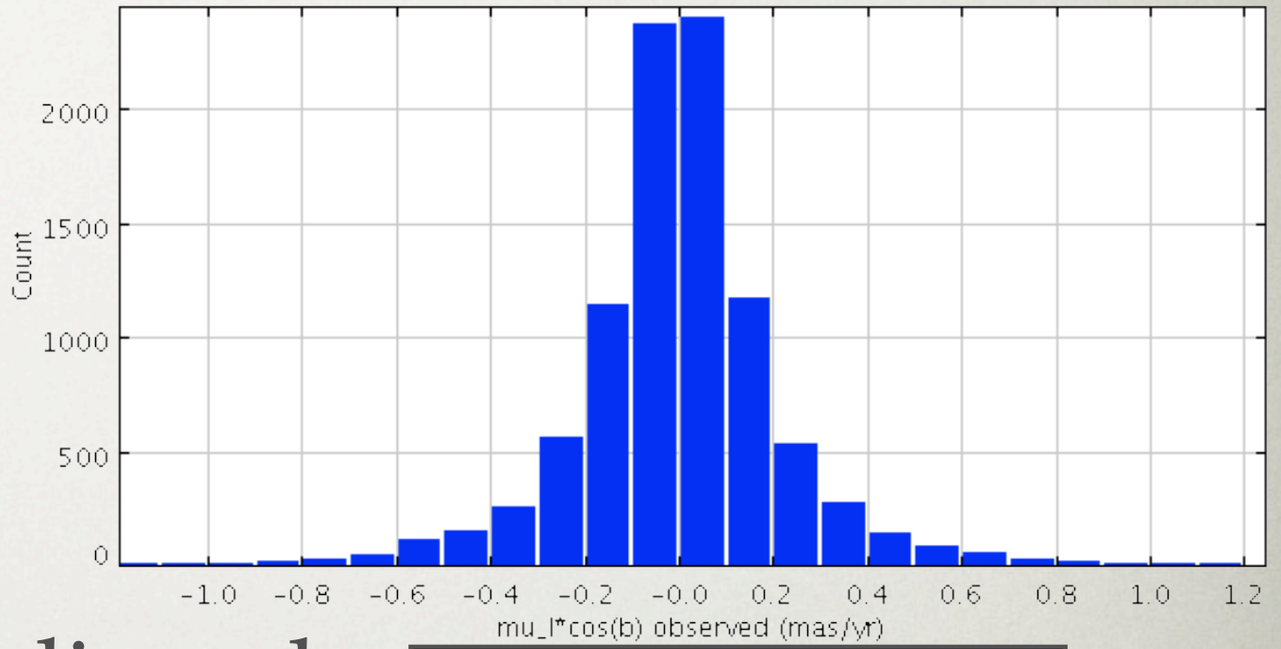




The region E



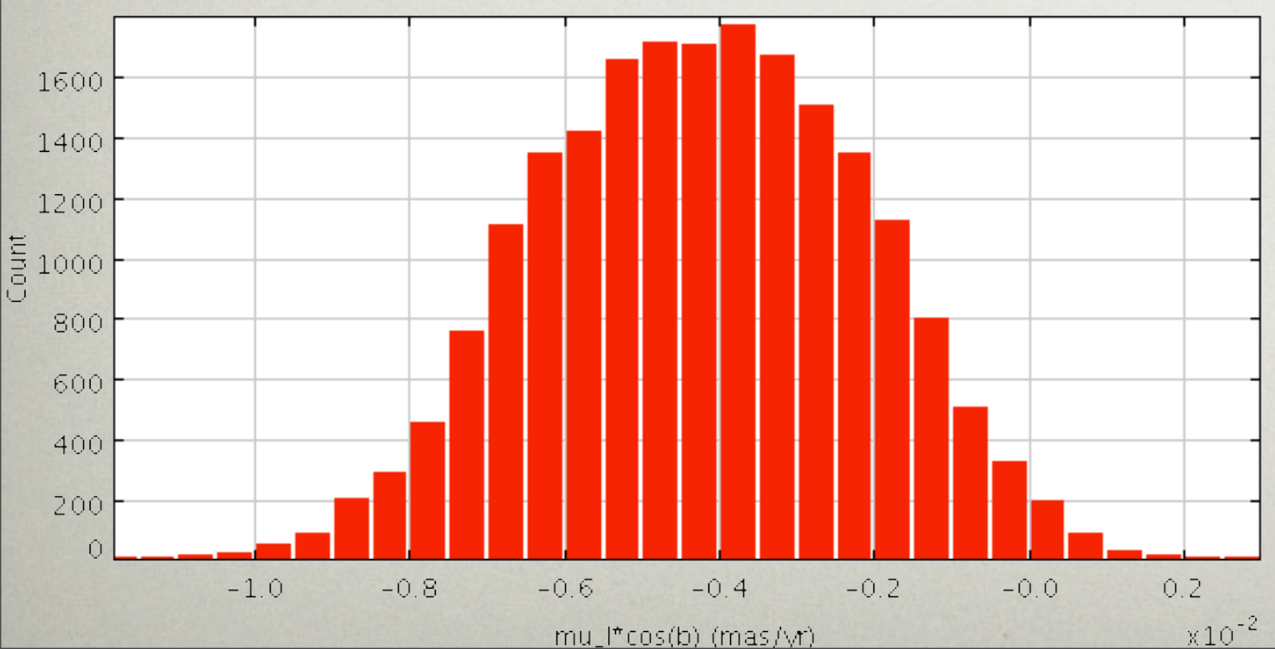
$\mu_l \, cos(b)$

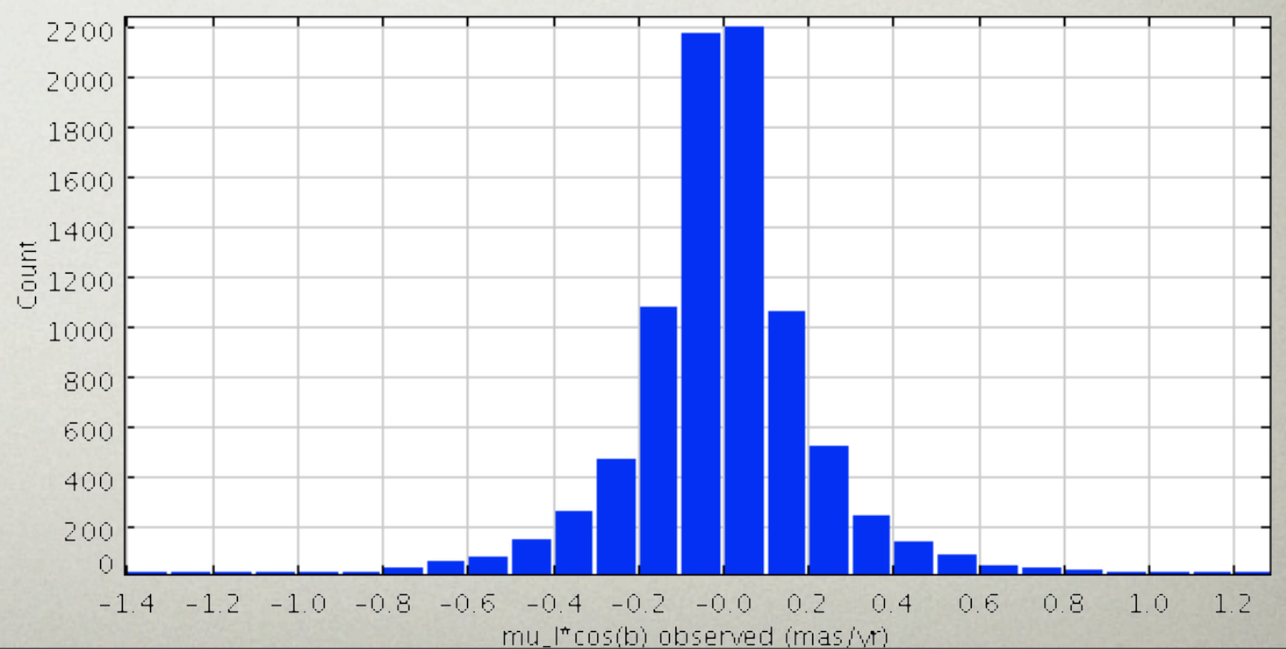


$\mu_l \, cos(b)_{observed}$

2 bars aligned

2 bars misaligned





First conclusions

- Statistics can help to find regions where the models are different
- Need of IR towards the inner regions
-