Outer Bulge RR Lyrae stars in the VVV Survey

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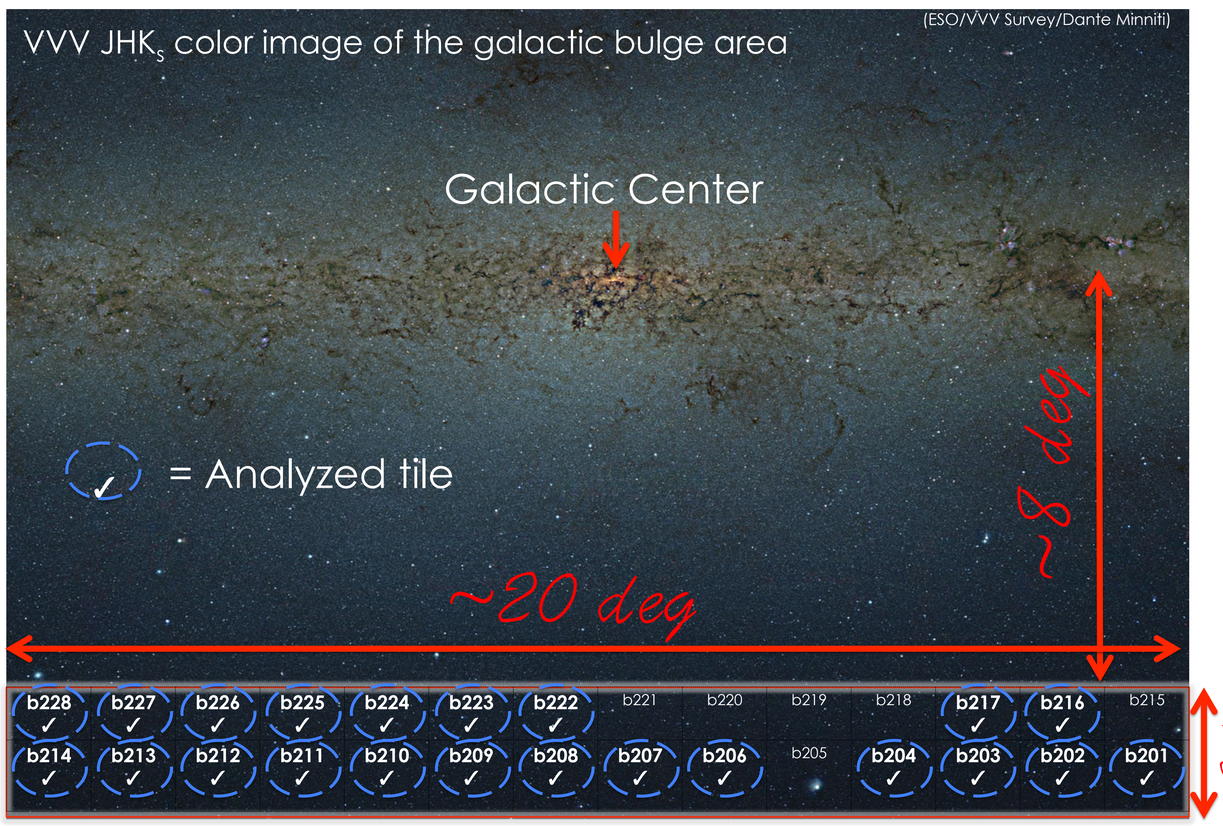


Complete analysis of the RR Lyrae stars in the tile b201 was published in
★ **Gran et al. 2015, A&A, 575, 114**

Motivation

★Vista Variables in the Vía Láctea (VVV) is a currently ongoing ESO Public Survey (Minniti et al. 2010, NewA, 15, 433)

★VVV uses **near-IR filters**(ZYJHK$_s$) to observe ~300 deg^2 in the Galactic bulge
- ★ZYJH one epoch at the first year of operation
- ★K$_s$-band variability survey: ~100 epochs

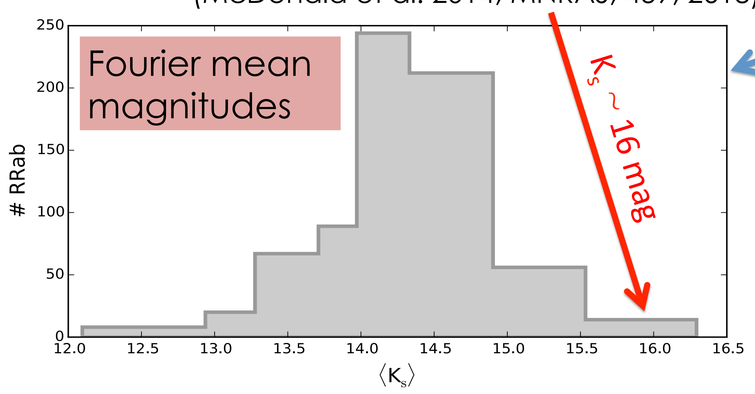
★Outer bulge avoided by other surveys: OGLE, MACHO

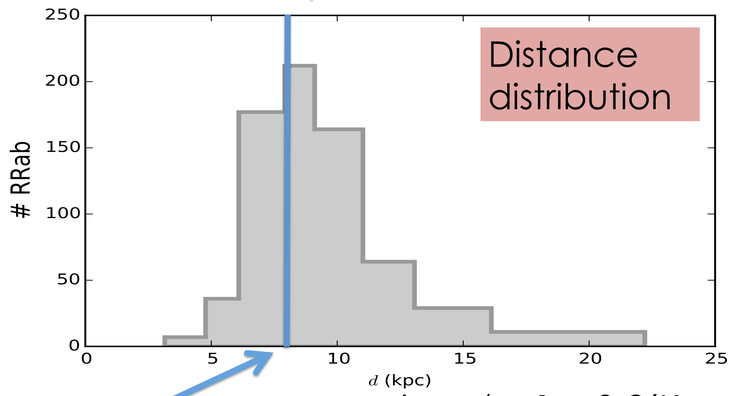
★RR Lyrae stars are excellent distance indicators !!
- ★Period-Luminosity Relation in the near-IR (Catelan et al. 2004, ApJS, 154, 633) (Alonso-García et al. 2015, AJ, 149, 99)

★High number density in the bulge (Soszynski et al. 2014, AcA, 64, 177; Pietrukowicz et al. 2012, ApJ, 750, 169)
- ★OGLE IV has more than 38000 RR Lyrae in the bulge + 1300 belonging to the Sgr dSph.

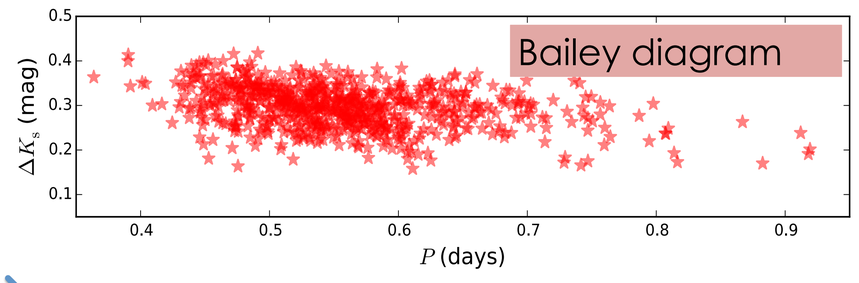
Results

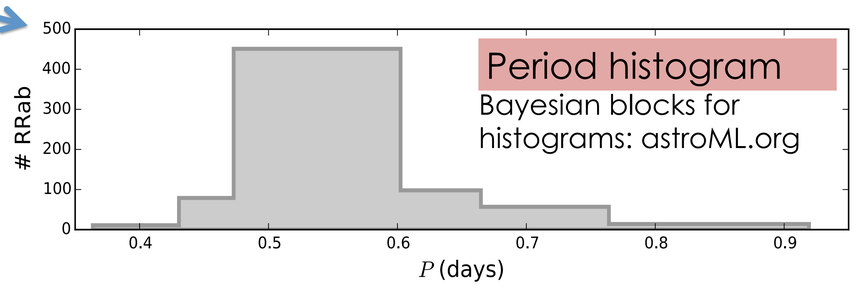
Sgr dSph candidates!!
(McDonald et al. 2014, MNRAS, 439, 2618)

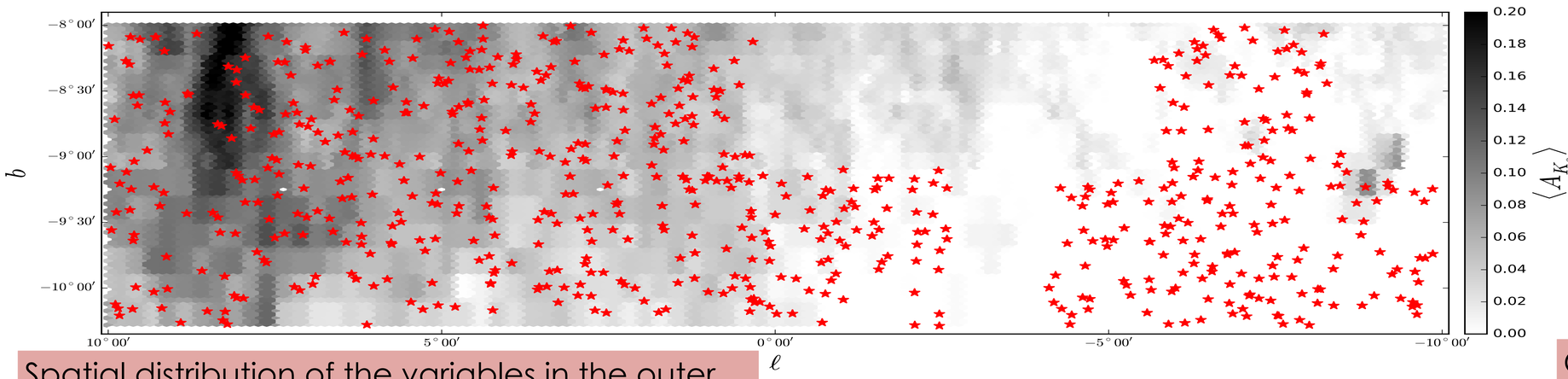




$\log d = 1 + 0.2(K_{s,0} - M_{K_s})$







Spatial distribution of the variables in the outer bulge with the BEAM extinction map.
(Gonzalez et al. 2012, A&A, 543, 13)

Future work

- ★ Complete the analysis of the tiles in the outer bulge.
- ★ Analyze the density of RRab stars across the galactic latitude.
- ★ Characterize the Sgr dSph candidates.
- ★ Complement this work with inner bulge and other variability studies.

Online version, plots and python codes:
fegran.github.io

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