

Density Maps of COROT Exoplanet Fields

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Maps of the stellar density of COROT exoplanet fields are presented, with segregations for dwarf and giant star populations. These maps are based on observations taken between June 2002 and June 2004 at the 2.5m INT telescope with the Wide-Field Camera, by the author, M. Deleuil, C. Moutou and P. Guiterman. Observations were taken in the filters B,V, and Thuan-Gunn r' (short: 'r') and 'i'. The segregation between dwarf and giant star populations were made with the method of localized interpretation of HR or color-color diagrams, based on defining a magnitude-dependent segregating color ($B-R_{\text{seg}}$) between the populations, with a spacial resolution of 0.5 degrees. A preliminary presentation of this method is given in my talk at the Corot Week 6, available at the meeting's web-site.

For all maps, only stars brighter than $r=15$ have been considered. Contour levels are identical for all plotted fields. For each of the fields, there are six maps shown, indicating the following:

- A scatter plot of all stars with $r < 15$ mag.
- Stellar density, including all stars with $r < 15$.
- Dwarf star density
- Giant star density
- Fraction of dwarfs to all stars. This map is stronger smoothed than the density maps.
- The B-R segregation color at $r=15$. This serves as an orientation to the distribution and relative strength of extinction in the field, where larger ('redder') values of $B-R_{\text{seg}}$ are indicative of higher extinction. A calibration of $B-R_{\text{seg}}$ in units of 'mag' or 'mag/kpc' is still to be developed.

The fields are plotted in this sequence:

43587_V2
45067_V0 (uncalibrated data)
49933_52265_V5 (combined field for both stars)
170580_V1
171834_V4
175726_V2
174866_V1
177552_V4
181555_V1

The numbers behind the 'V' give the version number of the catalog data that were used.

A few comments:

- Several of the fields (52265 the clearest, but also 49933, 43587, 174866) show apparent stellar clusters in the scatter plot and in the total density. The segregation algorithms recognized all of these as dwarfs, and they don't show up in the maps of giant densities, which gives some confidence that the algorithm is doing the right thing.

- In field 177552, the maps indicate a fairly low fraction of dwarfs and at the same time rather red segregation colors, indicating high extinction, which is counter-intuitive. From a plot of the B-R versus r colors it has been verified however independently of the algorithm, that high extinction and a majority of giant stars is indeed present in this field.





















































