Sizing Up the Stars

Diameters of A, F, and G Dwarfs with the CHARA Array

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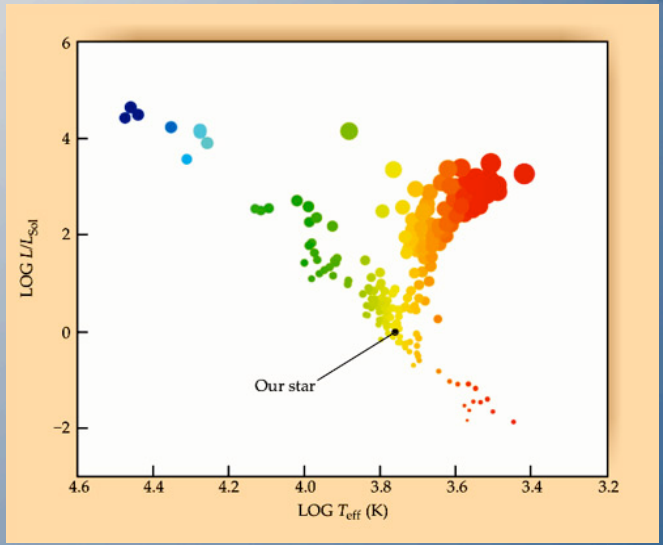
- Interferometric survey to measure the angular diameters of nearby, main-sequence, A, F, and G type stars
  - 'Normal', single stars: distance <15 pc (G stars) up to ~30pc (A stars)
  - N~50, average σθ~1.4%
  - **See also K. von Braun POP for K-M dwarfs and exoplanet host stars**
- **FUNDAMENTAL ASTRONOMY**
  - Empirically determined values of **radius**, **bolometric flux**, and **effective temperature**
- GOALS
  - Yes, we can now plot a **REAL** H-R diagram (shown on right)
  - Calibrate the effective temperature scale of MS stars
  - Fitting isochrones to these quantities constrain masses and ages of these stars



What we have learned

- Less direct methods tend to overestimate T_{eff} and underestimate radii
  - No correlation with metallicity or color index
- Isochrone ages and masses found with our T_{eff} and L
  - Results agree exceptionally with eclipsing binaries
  - Spectroscopic log *g* used in combination with interferometrically measured radii lead to over predicted masses!
    - Likely cause is the temperature offset (i.e. hotter T_{eff}, younger age, smaller radii and higher log *g*)
- Empirically derived color-temperature-metallicity relation
  - Temperature scale accurate to <100 K
  - Solution for metal poor stars is ~200 K cooler than any other relation!