How old are the A-stars?

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Ages in a Nutshell

- Measure radii of nearby A-stars
- Determine ages from evolutionary models
HR 8799 (A5 V)

HIP 78530 (B9 V... ≈A-type)

Fomalhaut (A3 V)

β Pictoris (A6 V)

Lafrenière et al. 2011

Kalas et al. 2008

Bonnefoy et al. 2011

Marois et al. 2010
The Sample

- A-type stars: $-0.06 < B-V < 0.31$
- Volume limited: $d < 50$ pc
- Northern: $\delta > -10^\circ$
- Single
- Total: 129
- Done: 7 (~5%)
Important Sub-samples

- $d < 25$ pc: 13
- UMa moving group: 8
- Hyades cluster: 13
- Rapid Rotators: 48
HD89021
\[ \theta = 0.704 \pm 0.044 \text{ mas} \]

\[ R = 3.180 \pm 0.20 R_{\odot} \]

Percent Error: 6.25%
0.417$\pm$0.039 Gyr
[Fe/H] = -0.68
Rapid Rotators

Che et al. 2011
$\theta_{\text{rad}} = 0.43 \text{ mas}$

$\rho = 1.18$

$\psi = 4^\circ$

McAlister et al. 2005
Future Work

• Near future:
  – Complete 25 pc sample
  – Complete UMa sample
  – Compare PAVO and CLIMB diameters

• Not as near future:
  – Complete Hyades sample
  – Pole-on rapid rotators