



# Imaging the Starspots of $\alpha$ Dra

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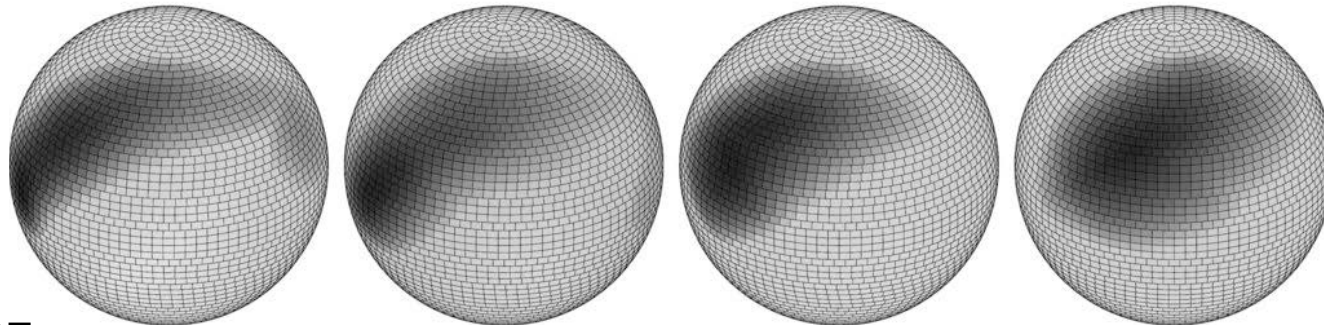
John Monnier, Xiao Che, Fabien Baron  
Heidi Korhonen, Bob Harmon, and Greg Henry



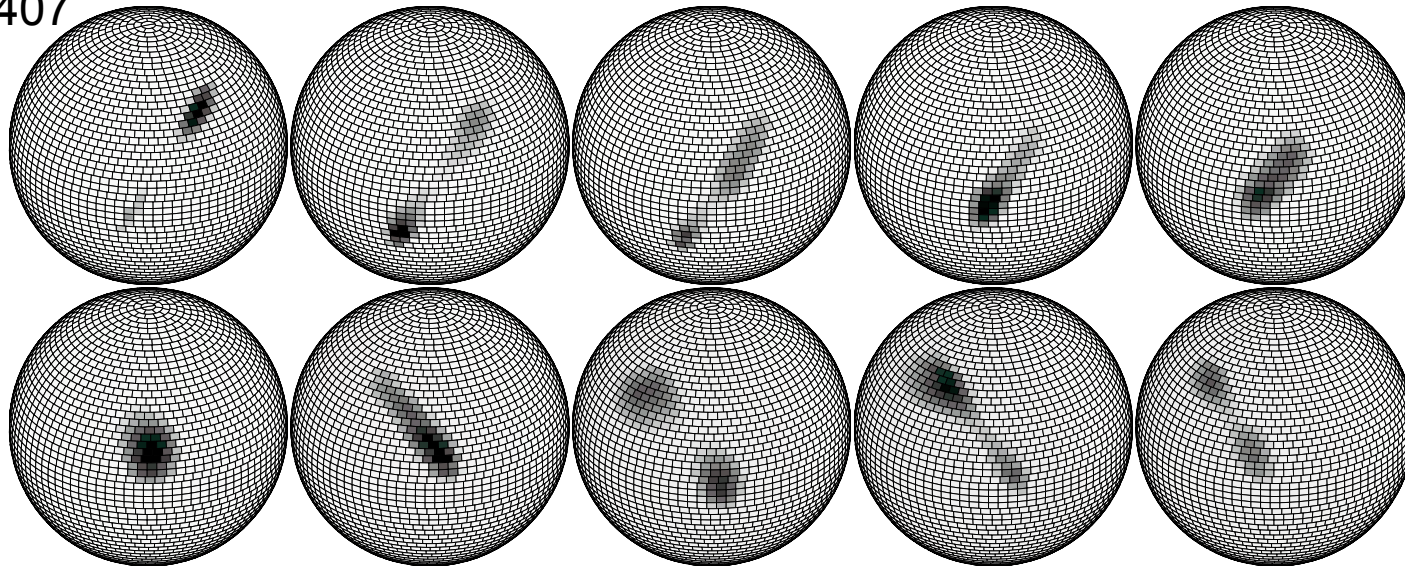


# Previous Spotted Star Work

II Pegasi



KIC 5110407



Roettenbacher et al. 2011, 2013



Observatoire de la COTE d'AZUR

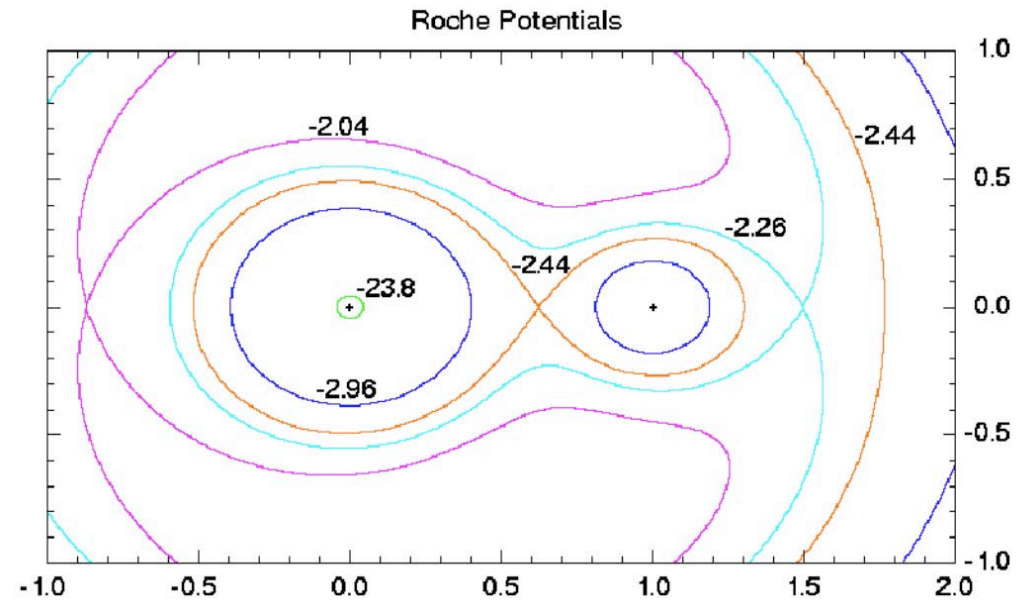


# Spotted Stars with CHARA

- Compare with contemporaneous Doppler imaging and Light-curve Inversion results
- High-resolution spectroscopy from VLT, NOT, STELLA robotic telescope
- Photometry from APT and SMARTS
- Four targets:  $\zeta$  And,  $\sigma$  Gem,  $\varepsilon$  UMa, o Dra

# RS CVn

- Close binaries
- Active  
chromospheres
- Semi-periodic  
features in the  
light curve likely due to spots



Kóvári et al. 2007



# o Dra Prior Knowledge

- RS CVn with G9III primary
- Distance of 105 pc
- Orbital period 138.4 days (Massarotti et al. 2008)
- Photometric period of 54.6 days (Hall & Persinger 1986)
- Eccentricity =  $0.114 \pm 0.014$  (Massarotti et al. 2008)
- Primary  $T = 4470 \pm 26$  K (Wu et al. 2011)
- Primary  $\log g = 1.92 \pm 0.10$  (Wu et al. 2011)
- Primary metallicity  $[Fe/H] = -0.48 \pm 0.07$  (Wu et al. 2011)
- Primary  $R = 24.5 R_{\odot}$  (Zielinski et al. 2012)
- $v \sin i = 16$  km/s (Glebocki et al. 2005)
- $i = 63-90^{\circ}$  (Glebocki & Stawikowski 1997)





# o Dra Observations

- Span ~70 days in April-June 2012
- 7 nights at CHARA
- 100+ observations in B- and V-band at APT
- 13 high-resolution spectra at NOT





# Mysteries of $\alpha$ Dra

- Why don't we see stronger spot signatures in the interferometry data?
- Why don't we see the companion?
- What is the rotational period of the primary?
- Are we seeing eclipses?
- Are there tidally-driven pulsations?