

NIR MAD photometry of the GC 47Tuc



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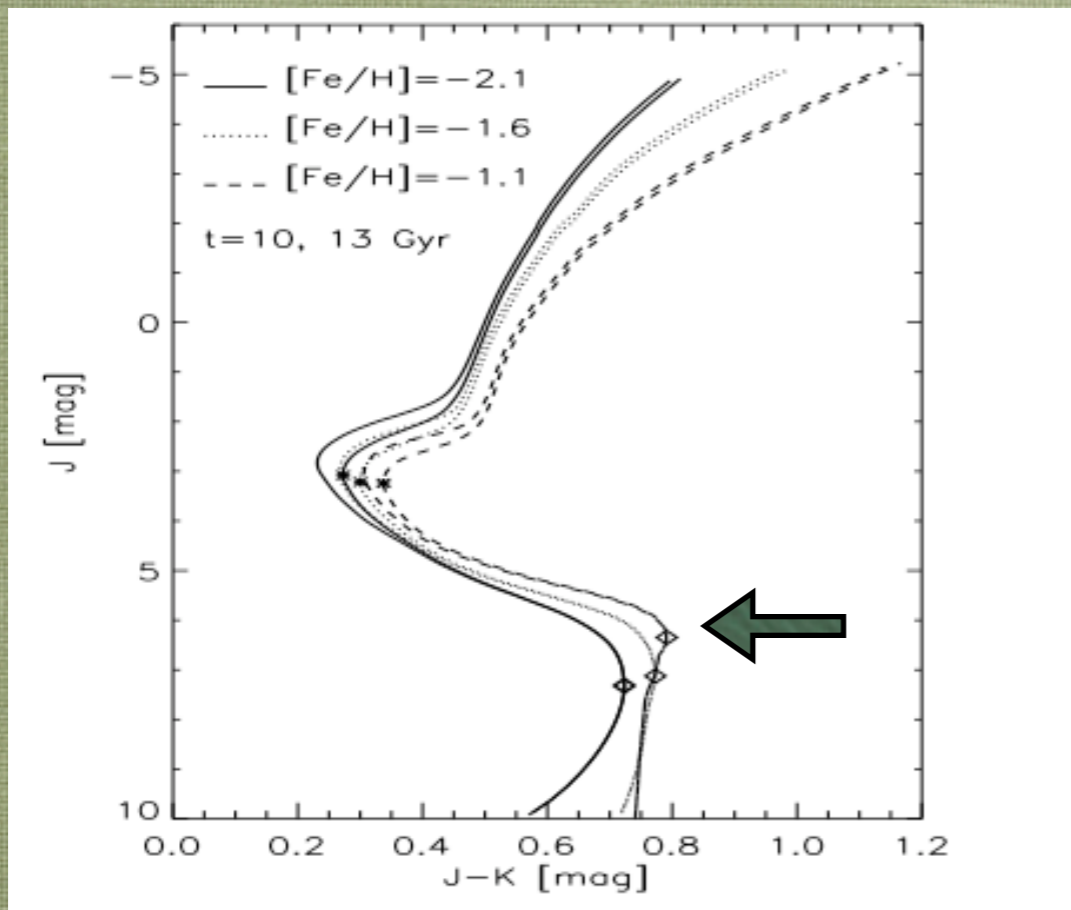
ESO Garching, Germany, 8-10 June, 2009

outline

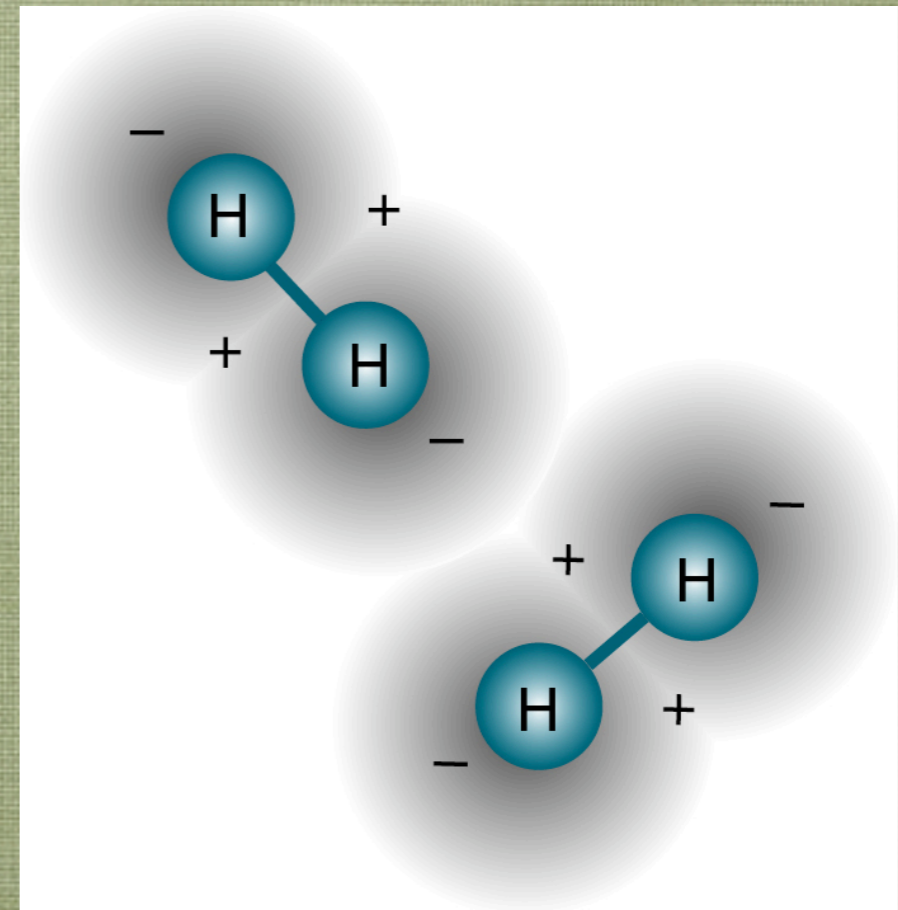
- a method to estimate the age of GCs
- 47Tuc data (SOFI, HAWK-I, MAD)
- discussion



CIA, Collision Induced Absorption the theory



Calamida et al. 2009



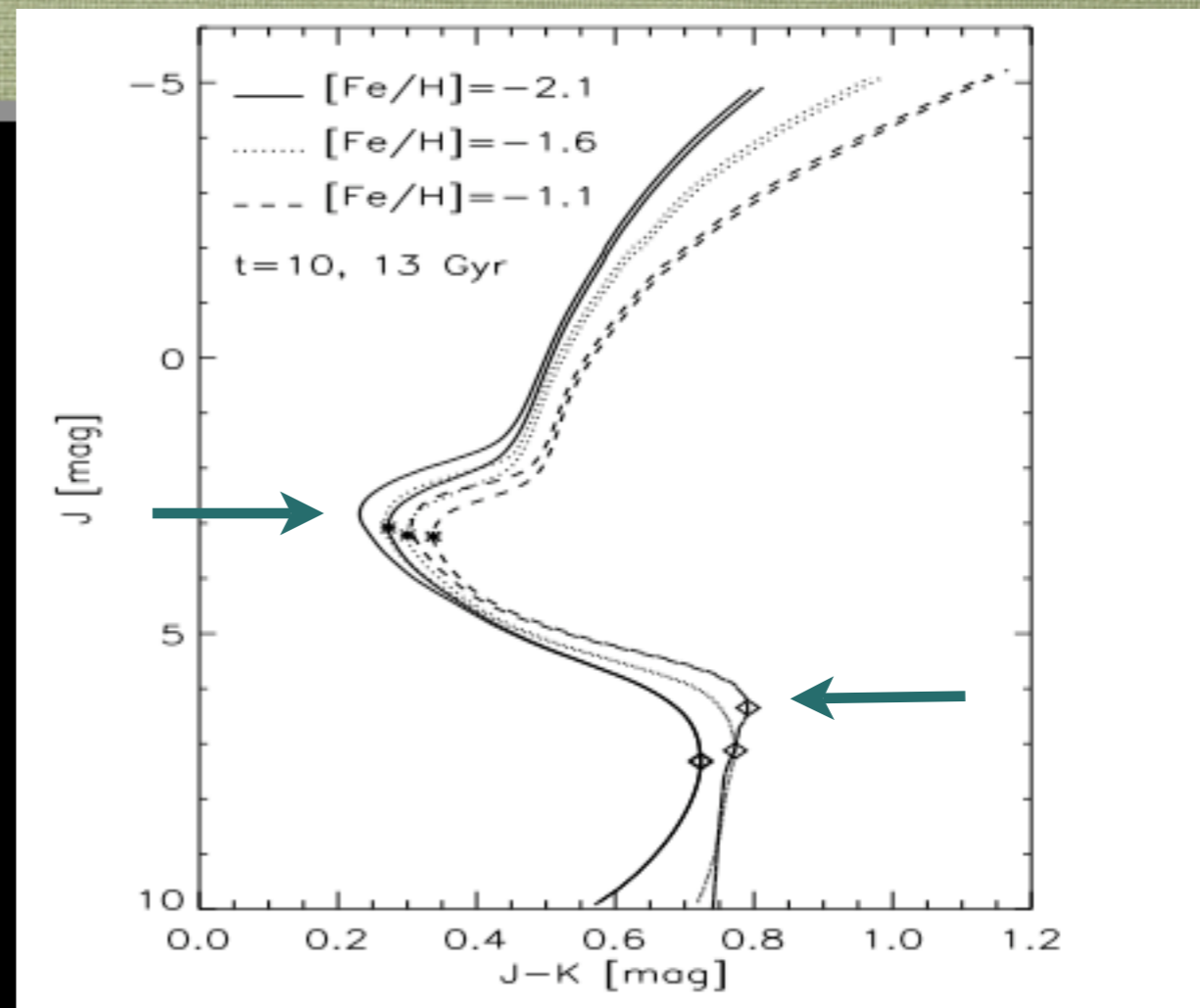
$0.7 \mu\text{m} < \lambda < 40 \mu\text{m}$ \longrightarrow **NIR** & MIR bands

CIA, Collision Induced Absorption the method



PROs

- no distance, no reddening dependance!
- mild dependance from Z
- faint MS stars brighter in NIR

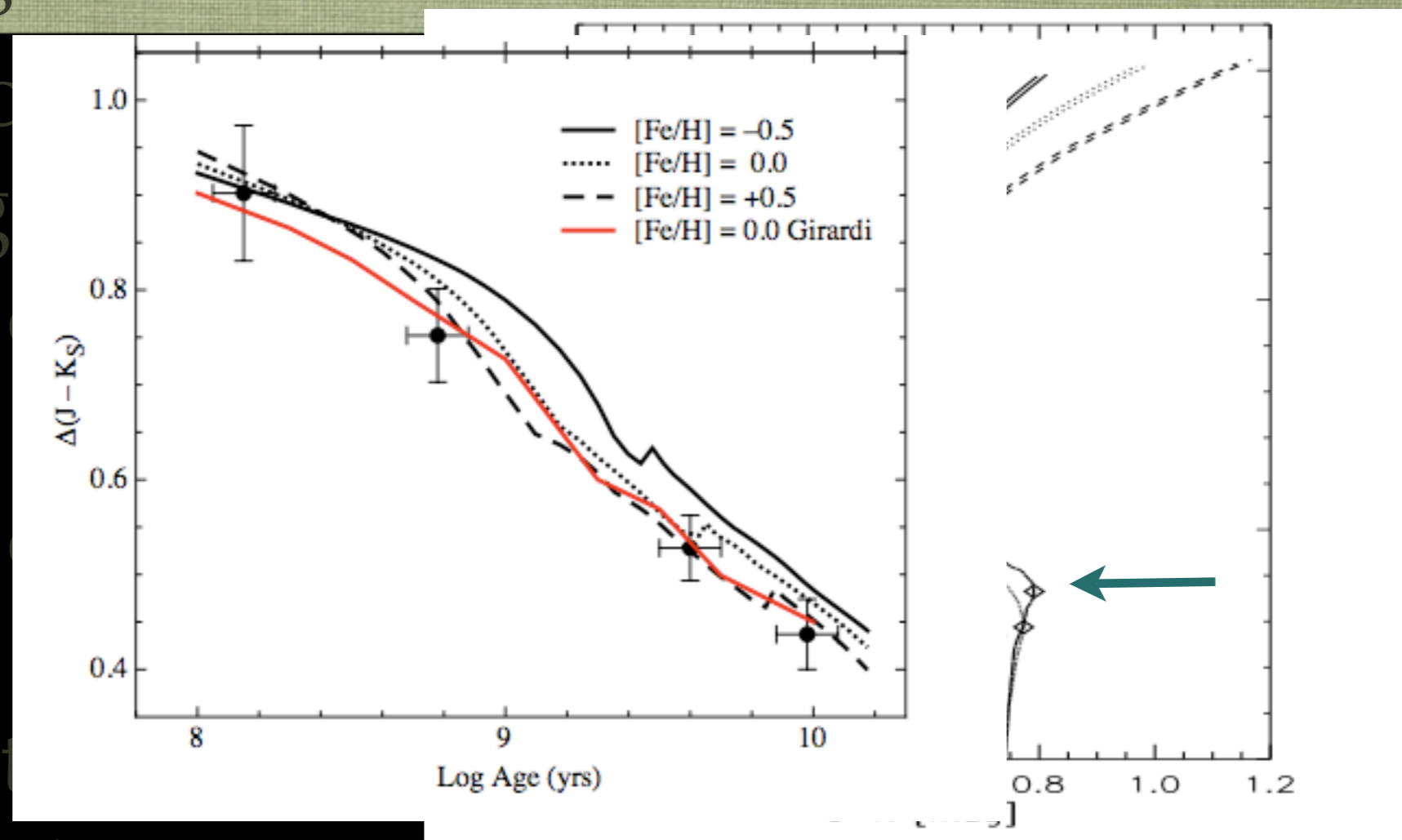


CIA, Collision Induced Absorption the method



PROs

- no distance
- reddening dependant
- mild dependant from Z
- faint MS stars brighter in NIR



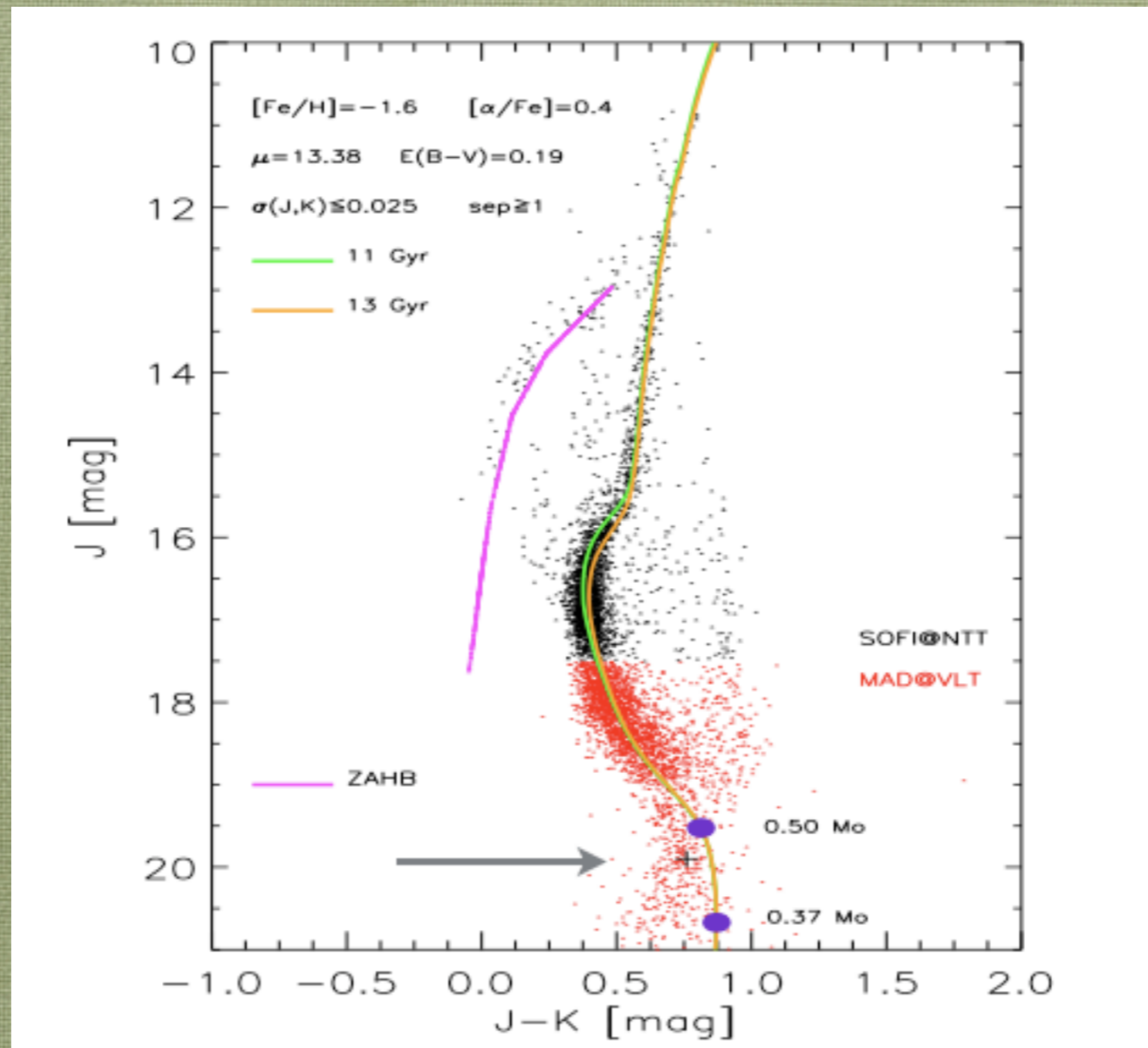
Sarajedini et al. 2009



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NGC3201



Calamida et al. 2009



47 Tuc

- $\mu = 13.37$

$$E(B - V) = 0.04$$

- $[Fe/H] = -0.76$ dex

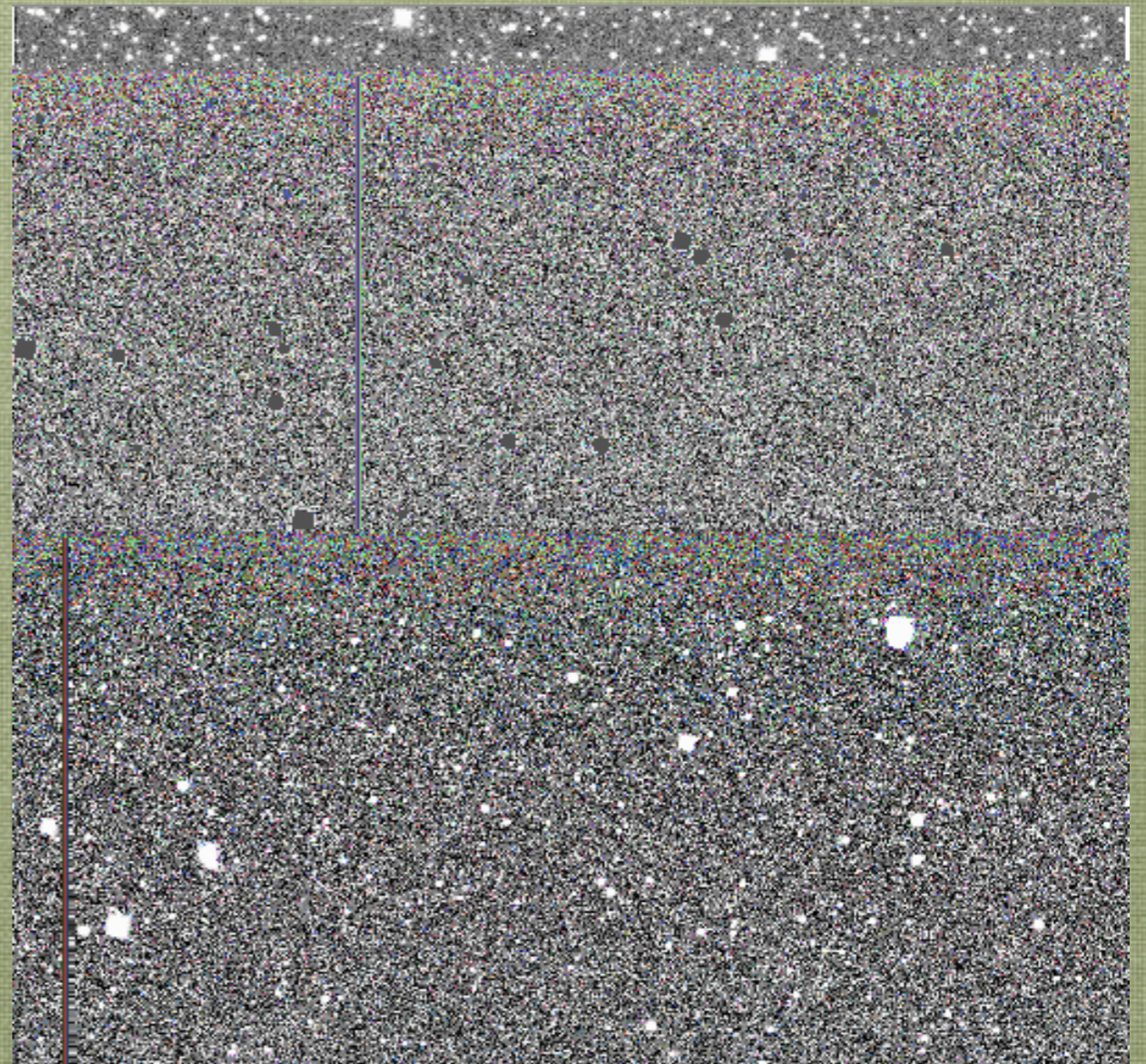
- $\log \rho = 4.81 L_{\odot} \text{pc}^{-3}$

(Harris 2003)



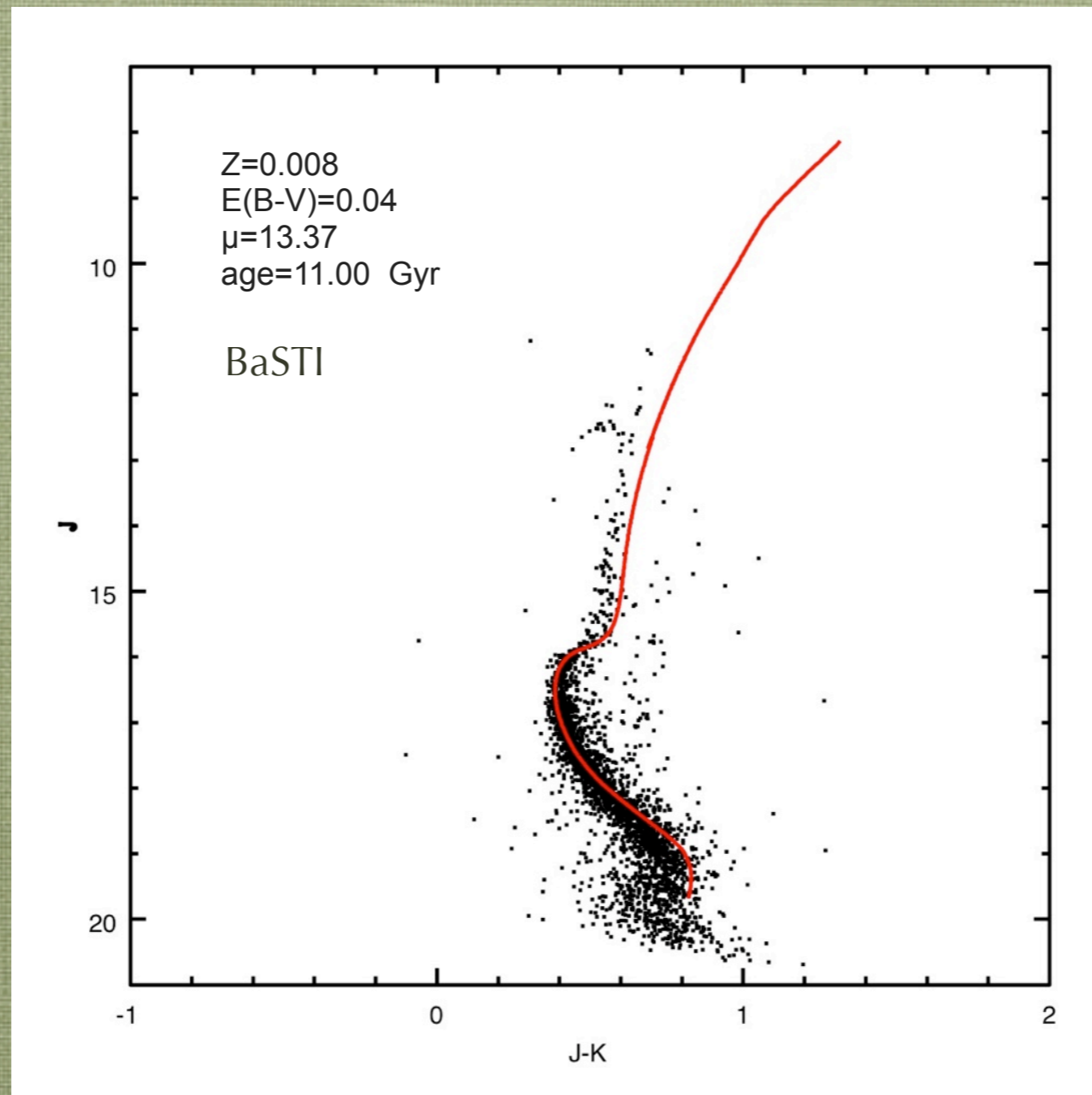
47Tuc: SOFI dataset

- 0.288 arcsec/pixel
- FoV= 4.95 arcmin²
- 1 pointing
- 23 H-band images, 14 J-band images and 30 K-band images (DIT=3 sec, NDIT=14÷33)
- seeing H-band 0.75÷1.01 arcsec, seeing J-band 0.78÷0.94, seeing K-band 1.04÷1.44 arcsec



47Tuc:

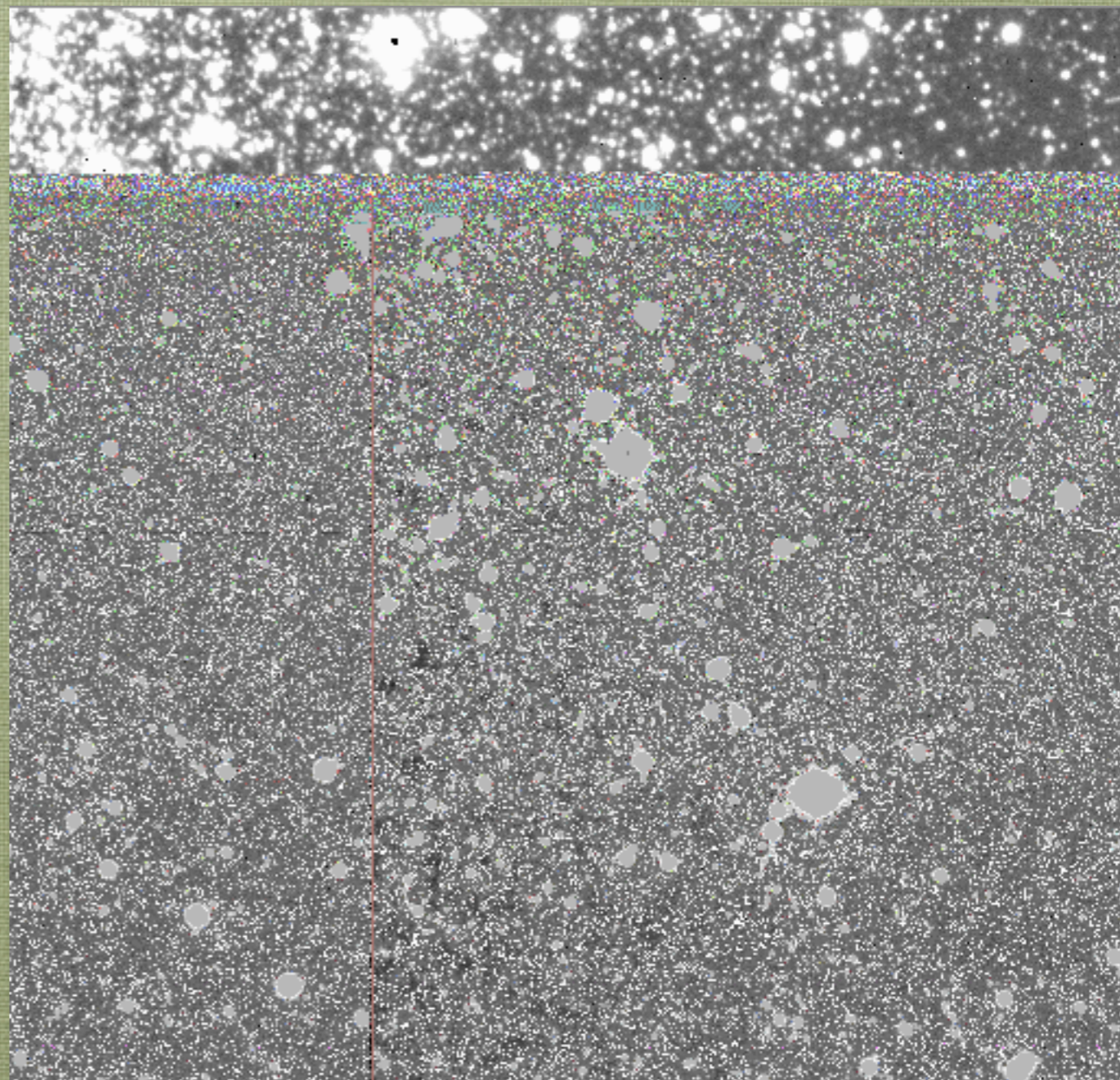
SOFI preliminary results



47Tuc

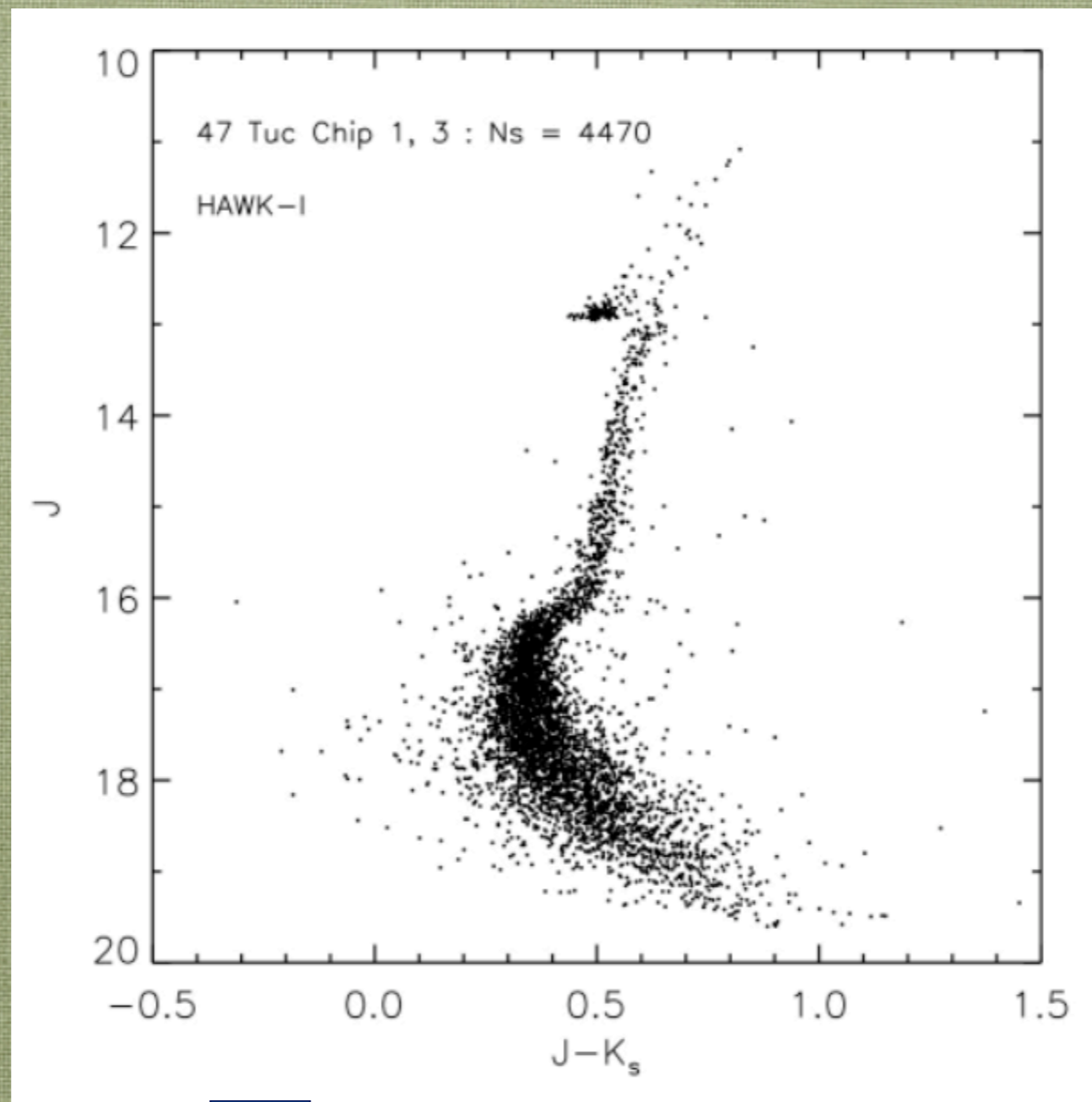
HAWK-I dataset

- 0.106 arcsec/pixel
- FoV= 7.5 arcmin²
- 1 pointing
- 50 J-band images and 50 K-band images
- seeing 0.4÷0.9 arcsec



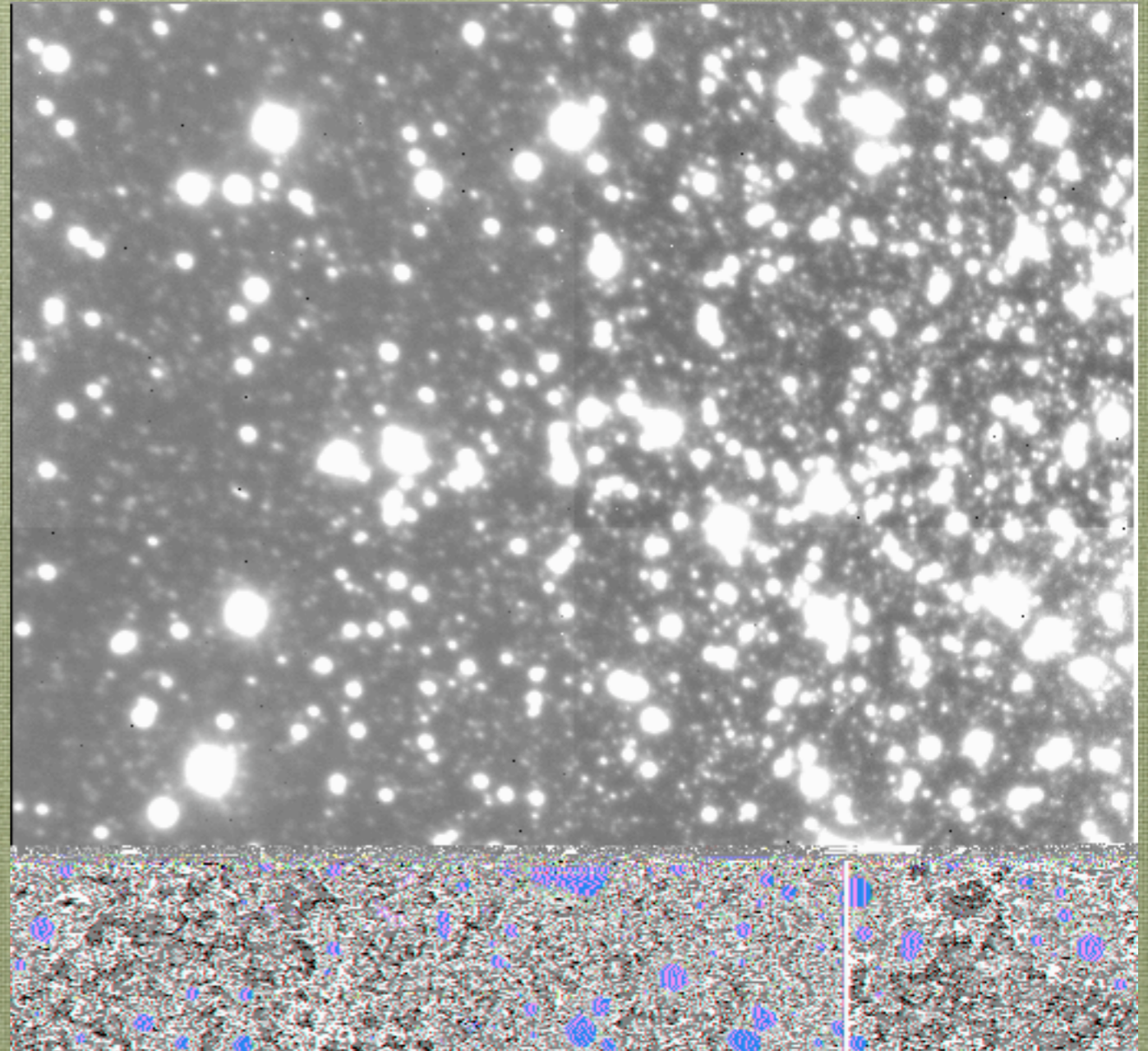
47Tuc

hawk-i preliminary results



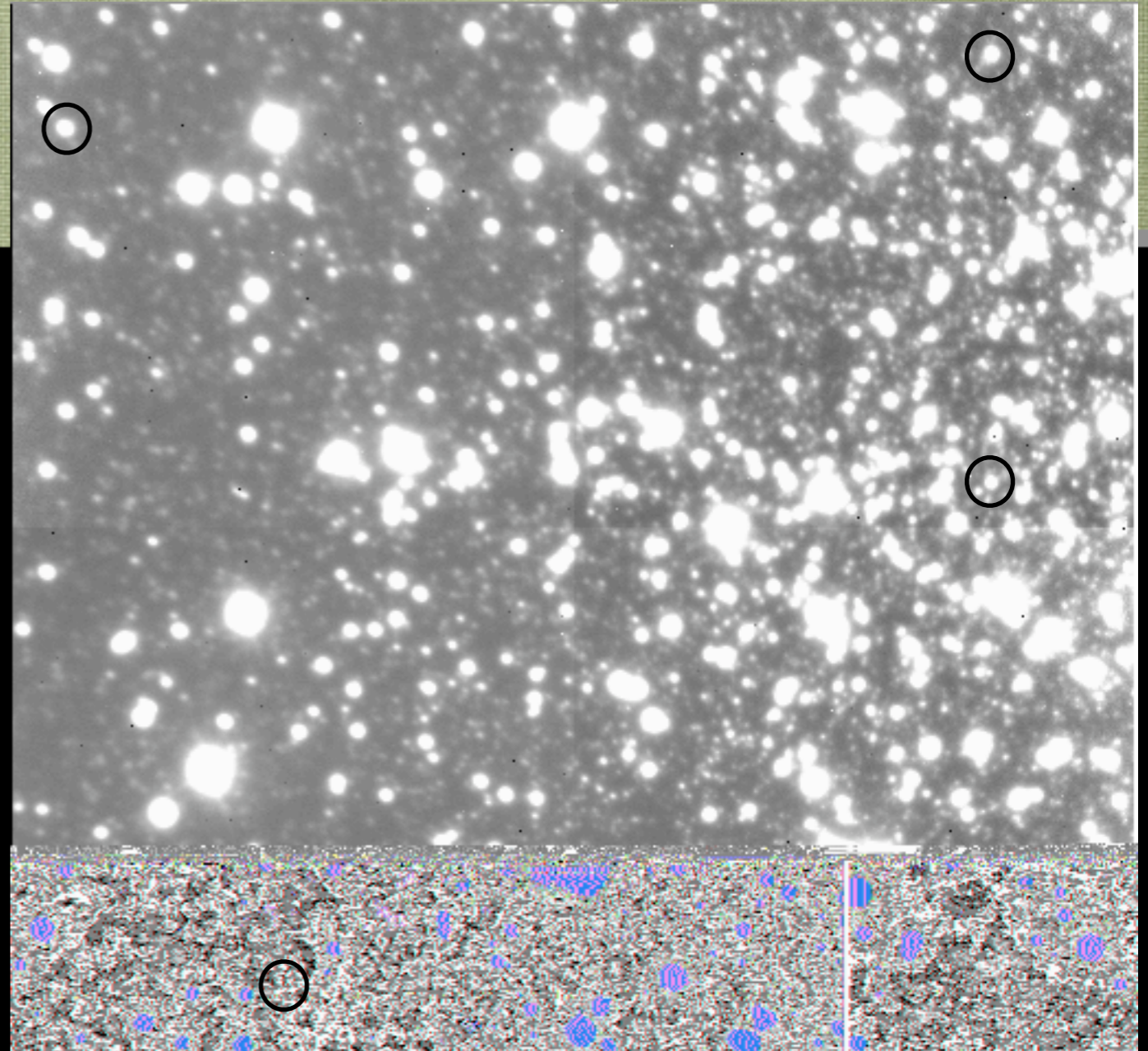
MAD pointing I

- 0.028 arcsec/pixel
- FoV= 2 arcmin²
- 1 pointing
- 6 J images and 11 K images (DIT=10 sec, NDIT=3)
- seeing 0.8 arcsec



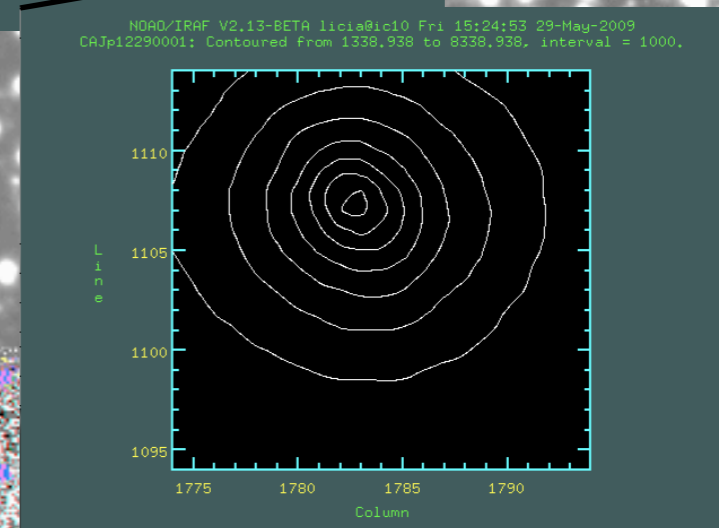
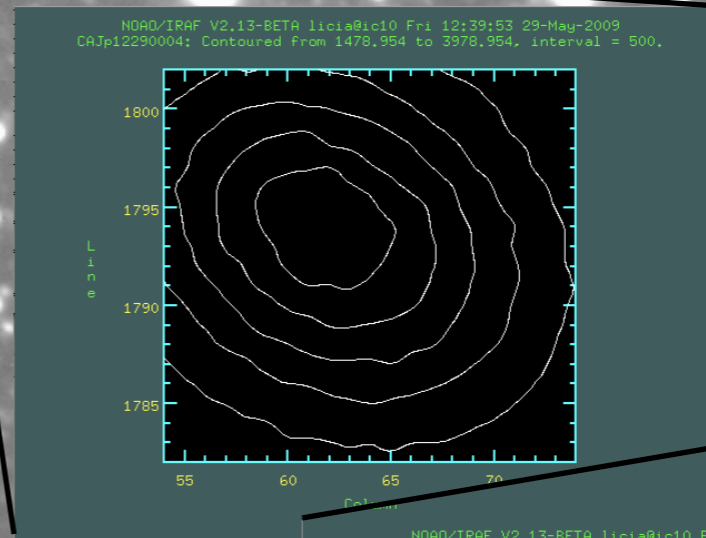
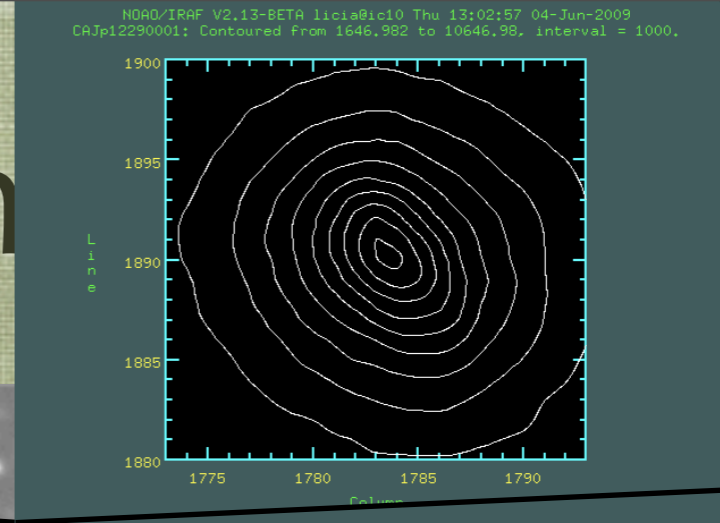
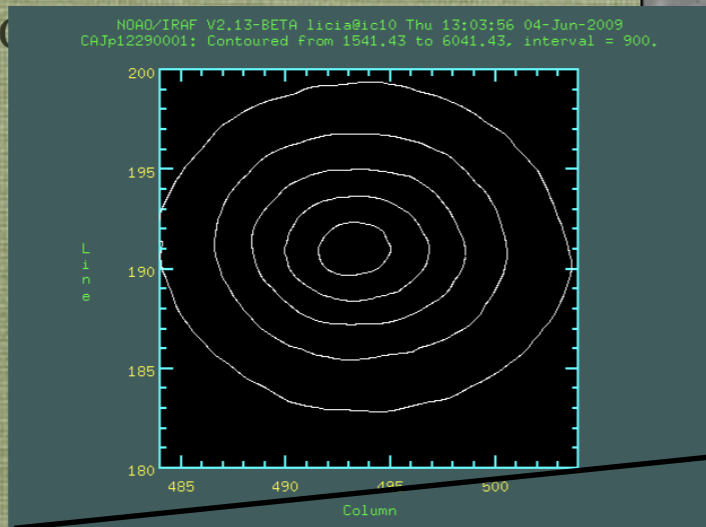
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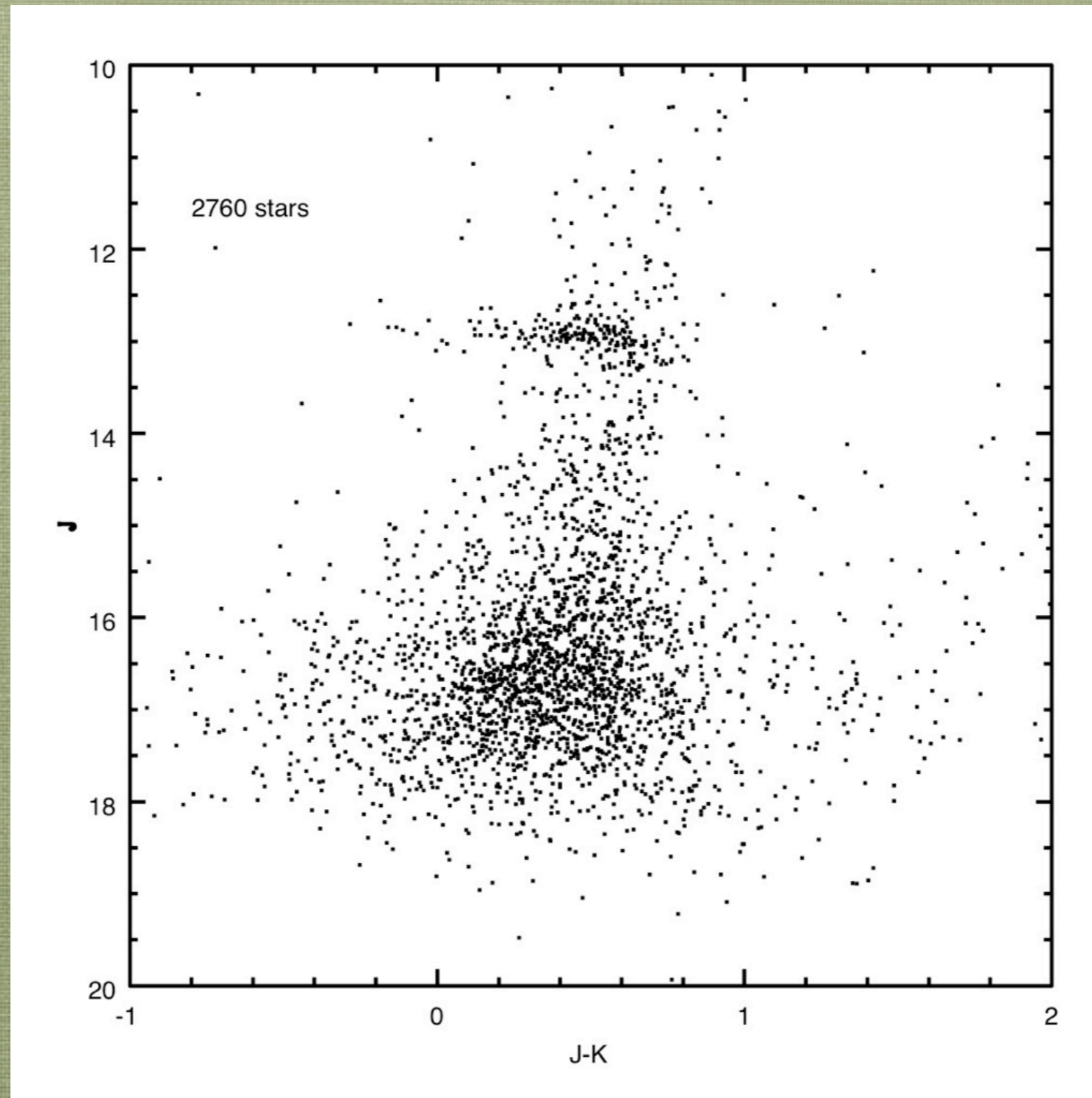


MAD pointing

- 0.028 arcsec/pixel
- FoV= 2 arcmin²
- 1 pointing
- 6 J images and 11 K images (DIT=10 sec, NDIS=3)
- seeing 0.8 arc

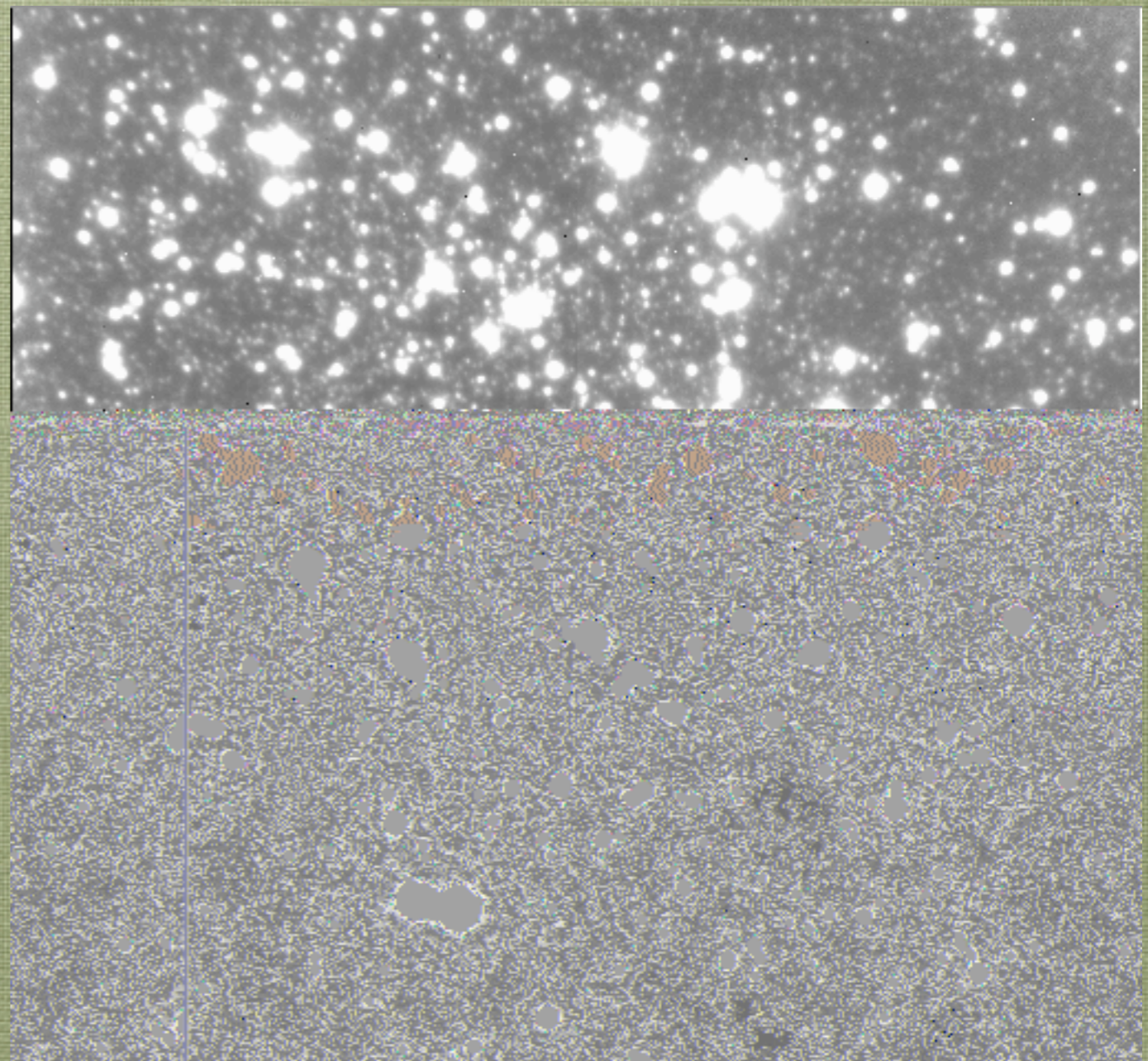


MAD pointing I



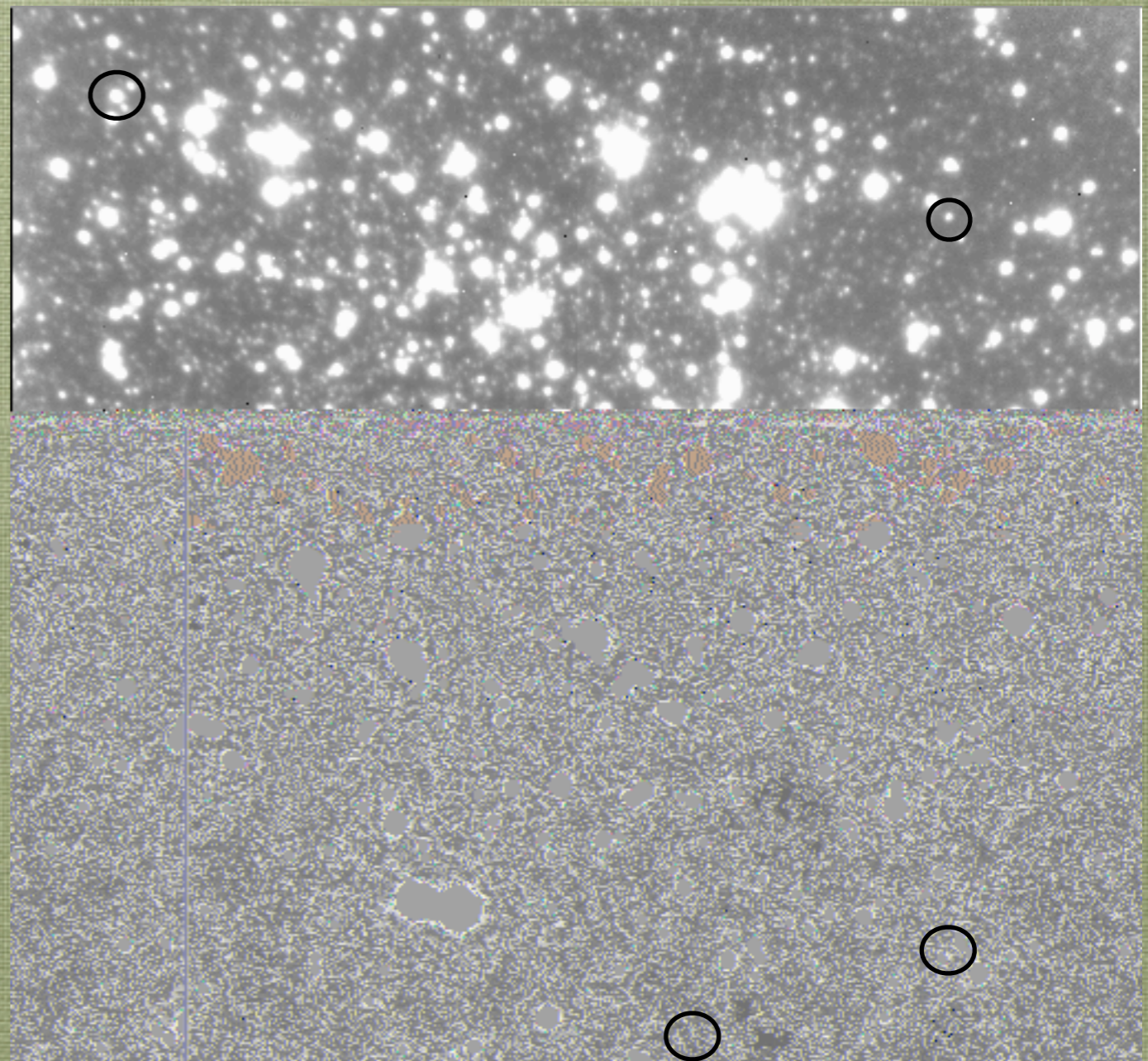
MAD pointing II

- 0.028 arcsec/pixel
- FoV= 2 arcmin²
- 1 pointing
- 63 J images and 57 K images (DIT=10 sec, NDIT=3)
- seeing 0.8 arcsec



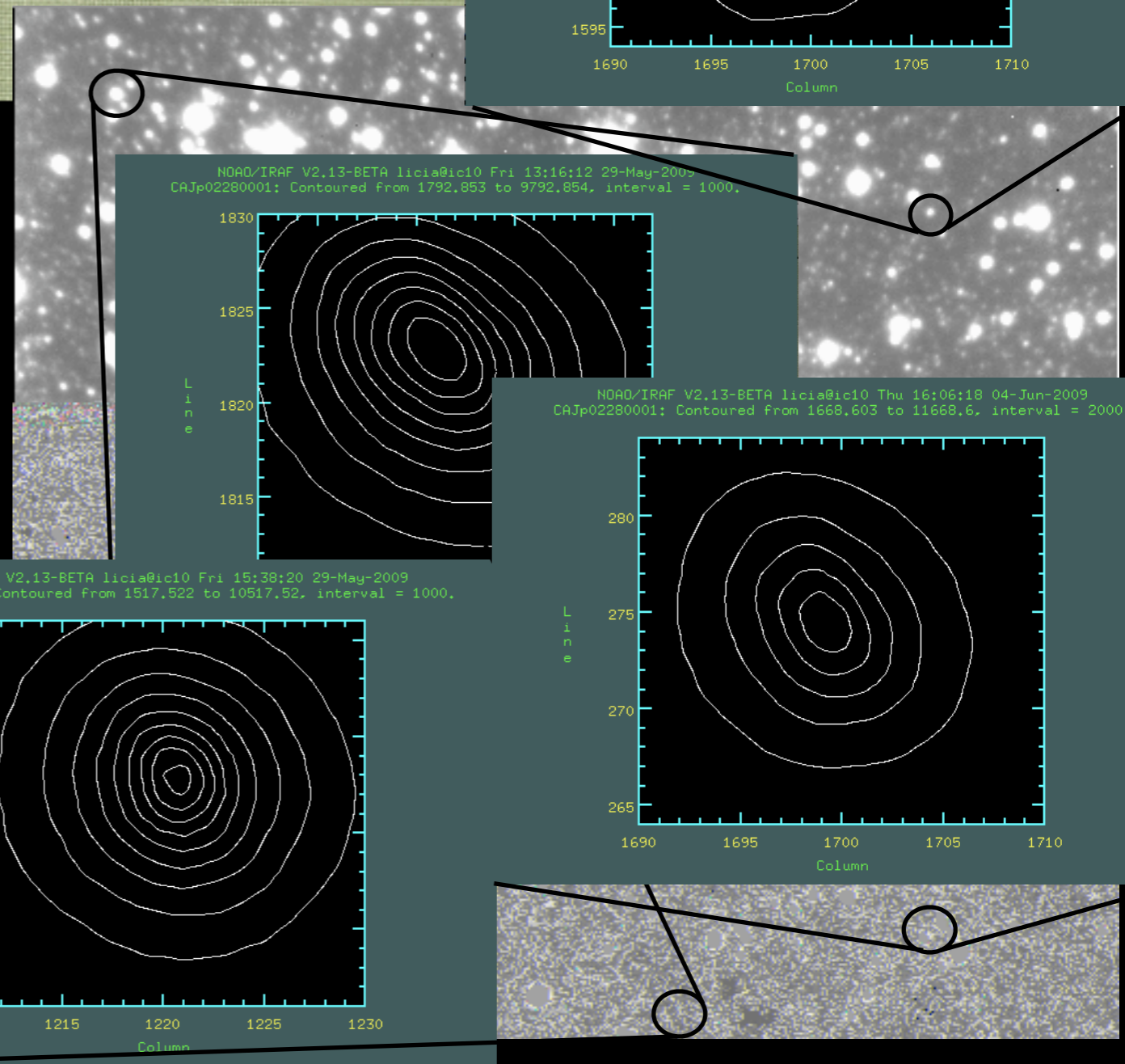
MAD pointing II

- 0.028 arcsec/pixel
- FoV= 2 arcmin²
- 1 pointing
- 63 J images and 57 K images (DIT=10 sec, NDIT=3)
- seeing 0.8 arcsec

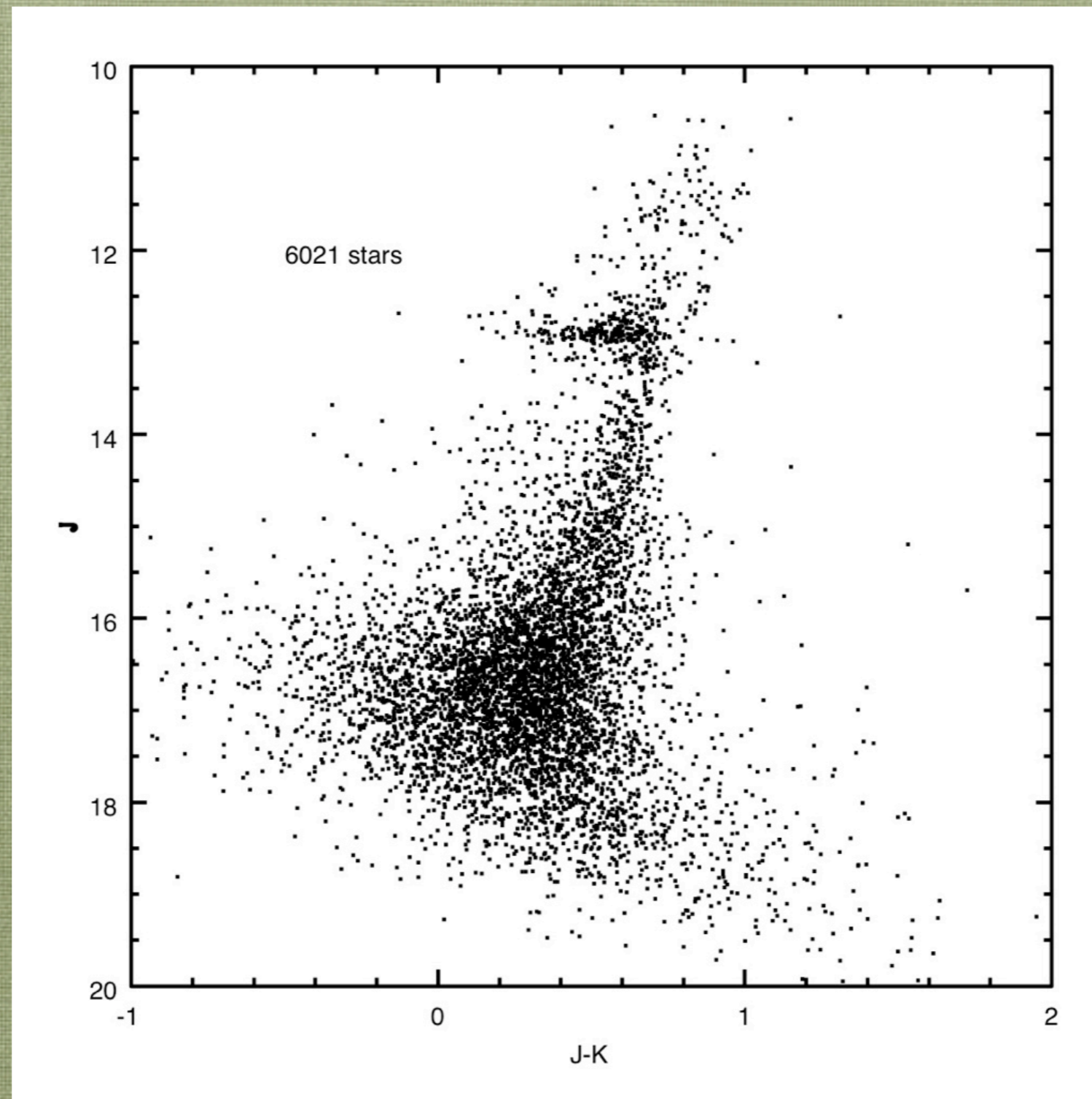


MAD pointing

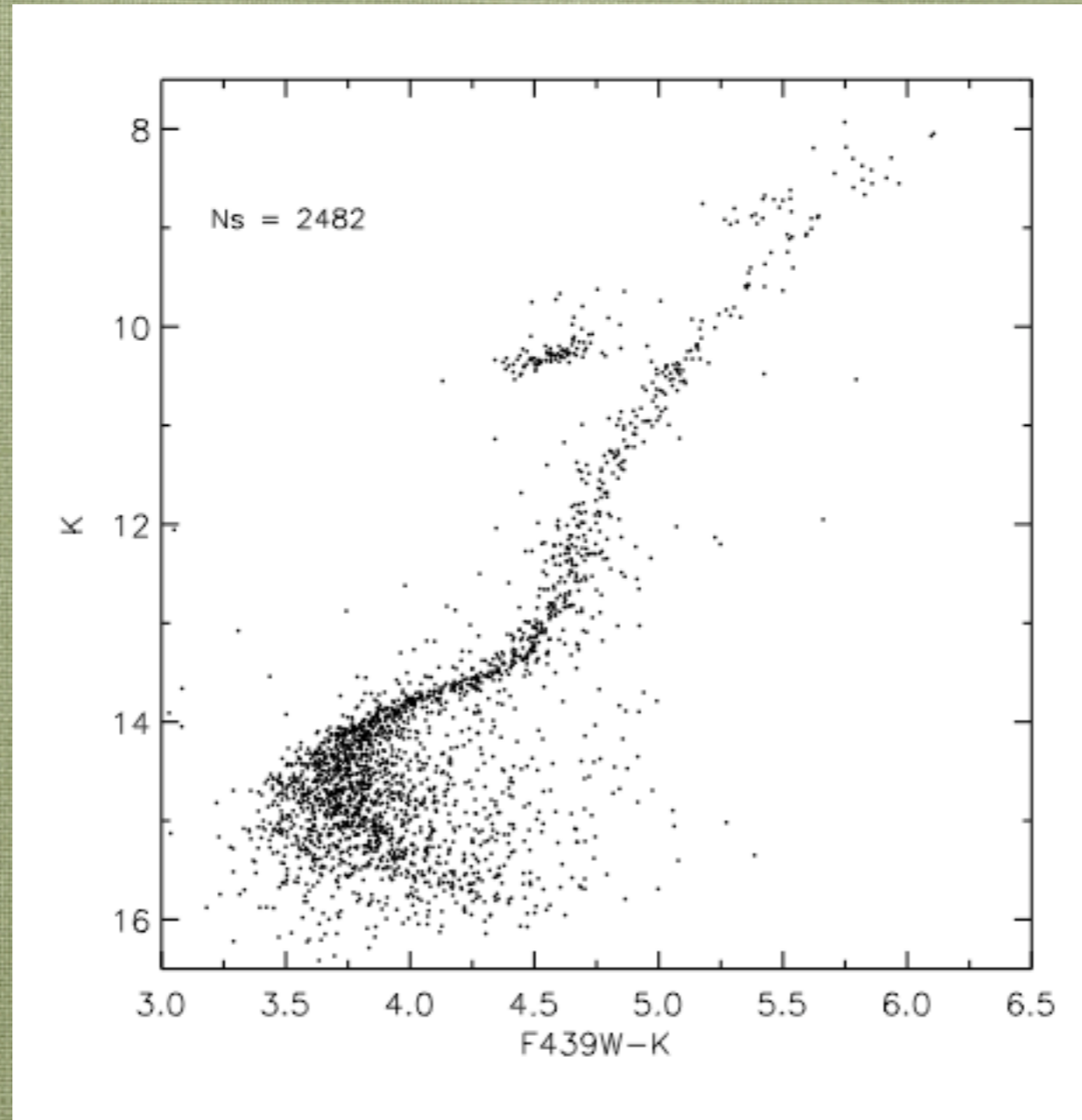
- 0.028 arcsec/pixel
- FoV= 2 arcmin²
- 1 pointing
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(DIT=10 sec, NDIT=3)
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MAD pointing II



MAD pointing II

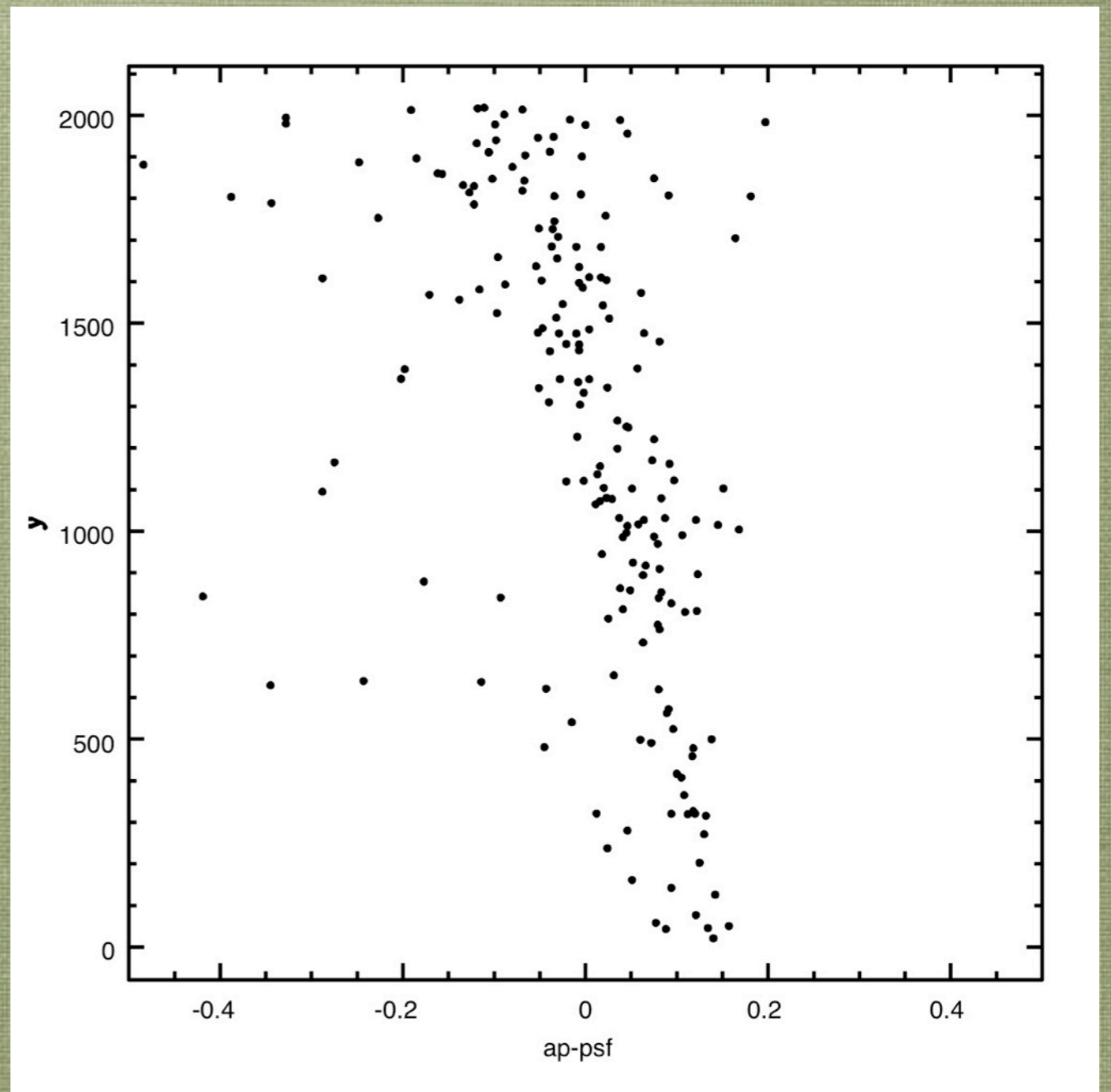
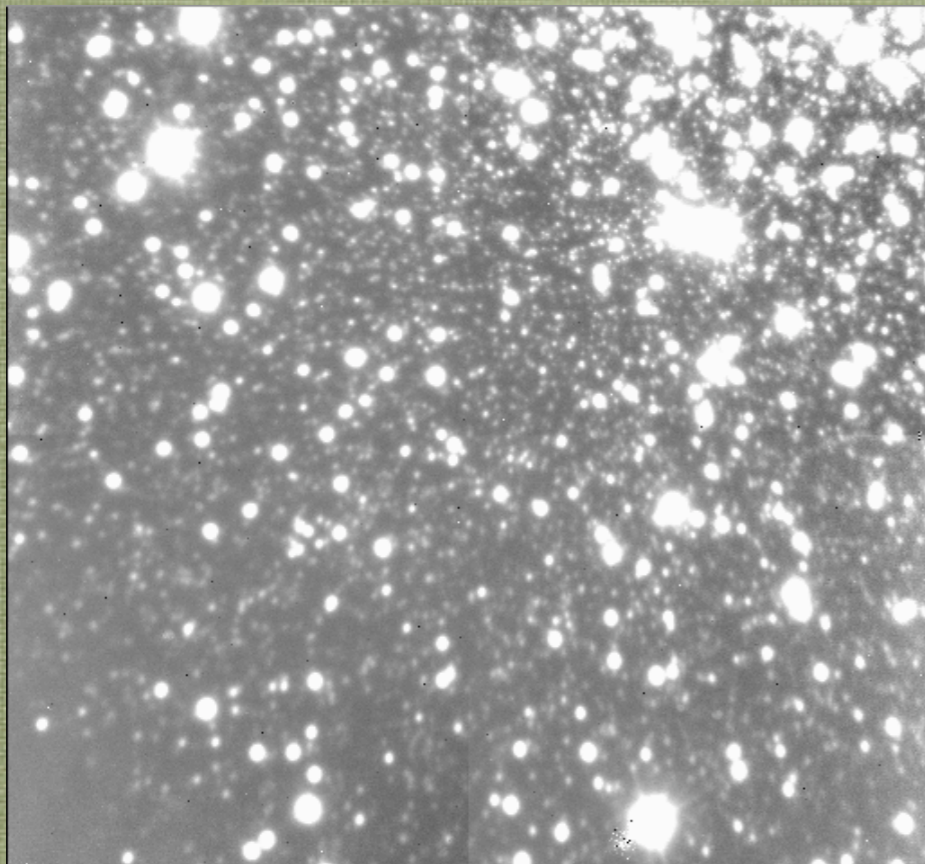


F439W-K photometry from database by Piotto et al. 2002

MAD dataset

psf variation

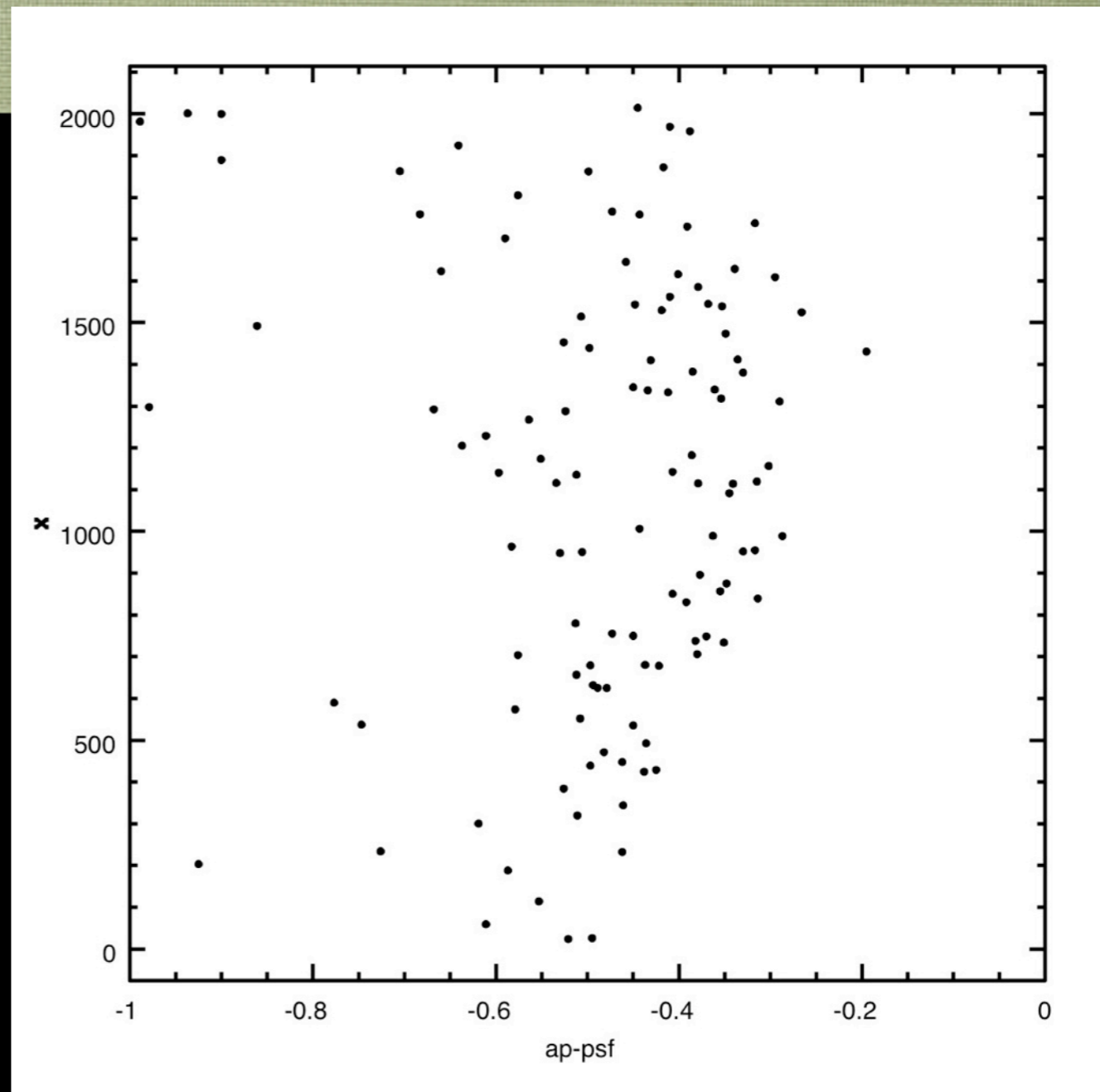
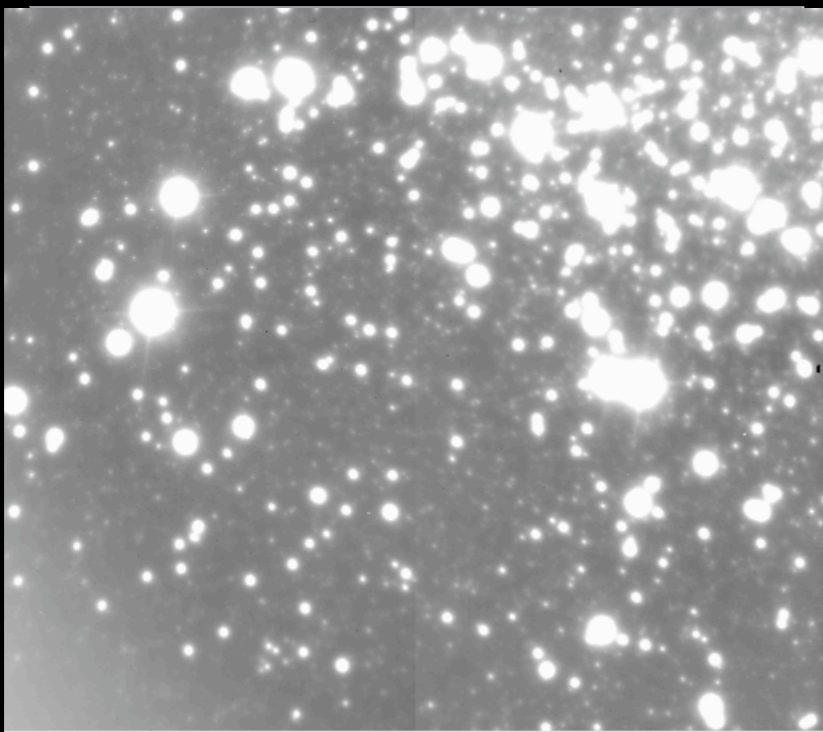
J band



MAD dataset

psf variation

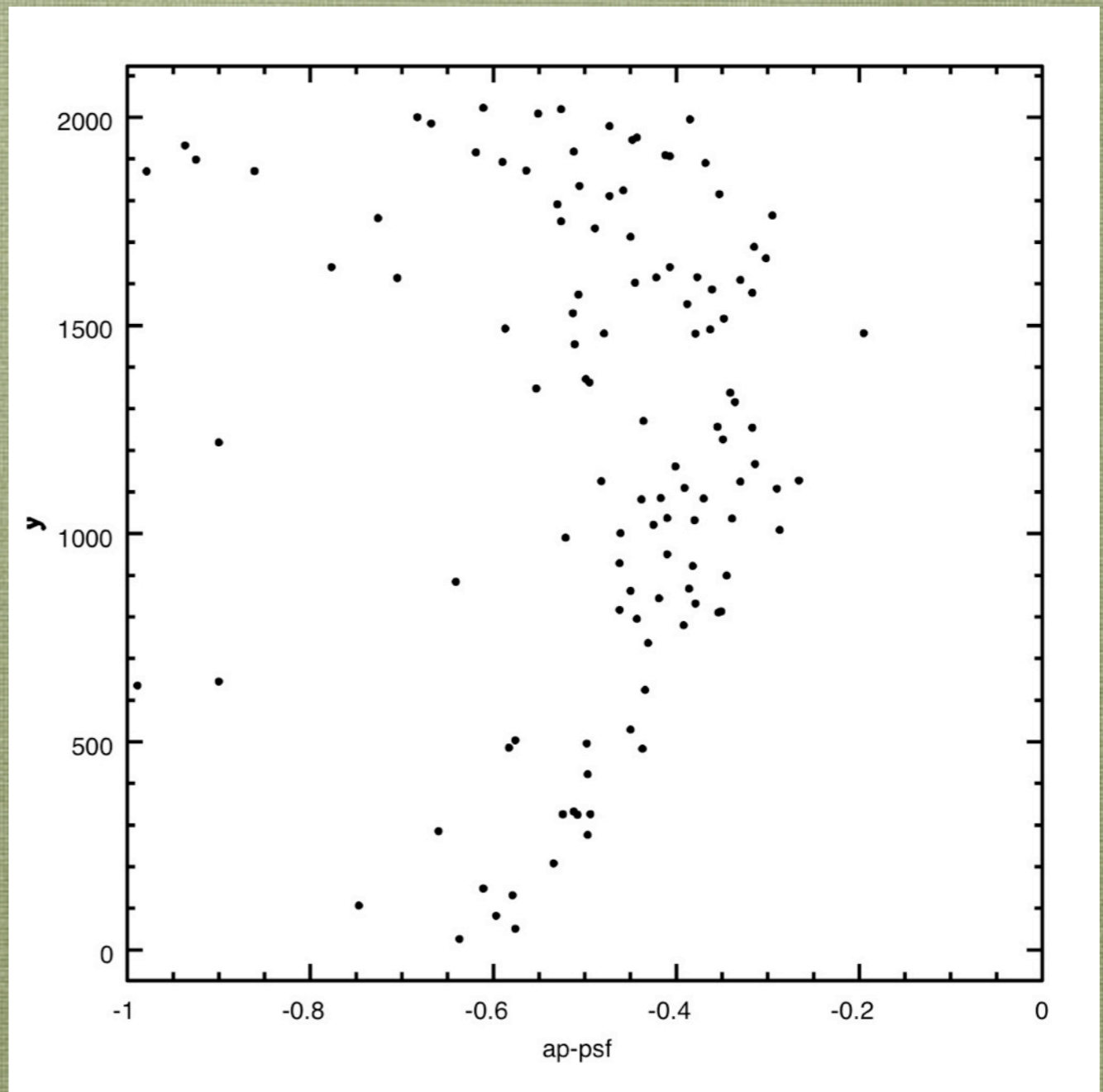
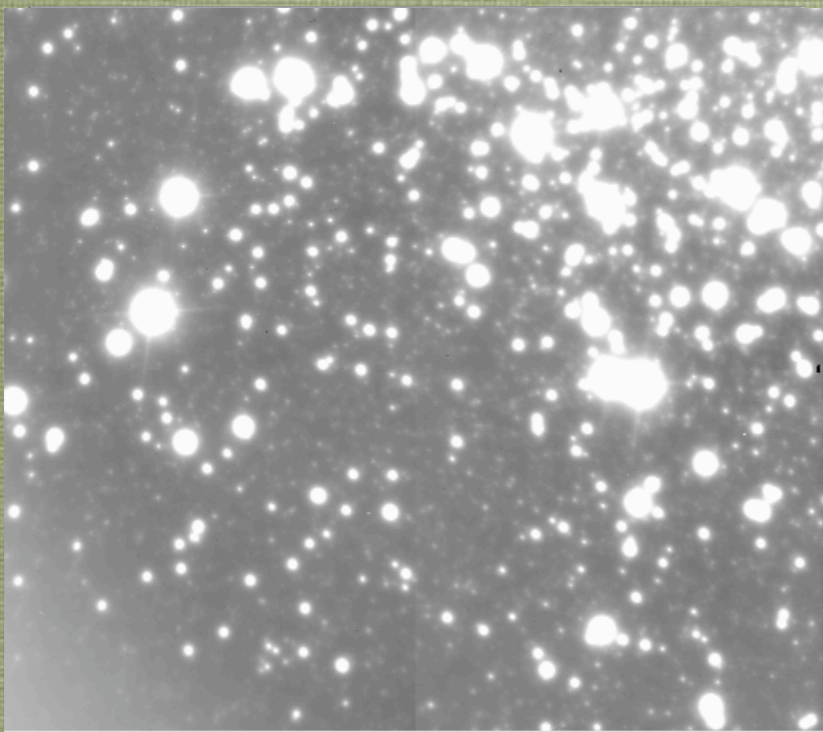
K band



MAD dataset

psf variation

K band



Thank you for your attention!



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