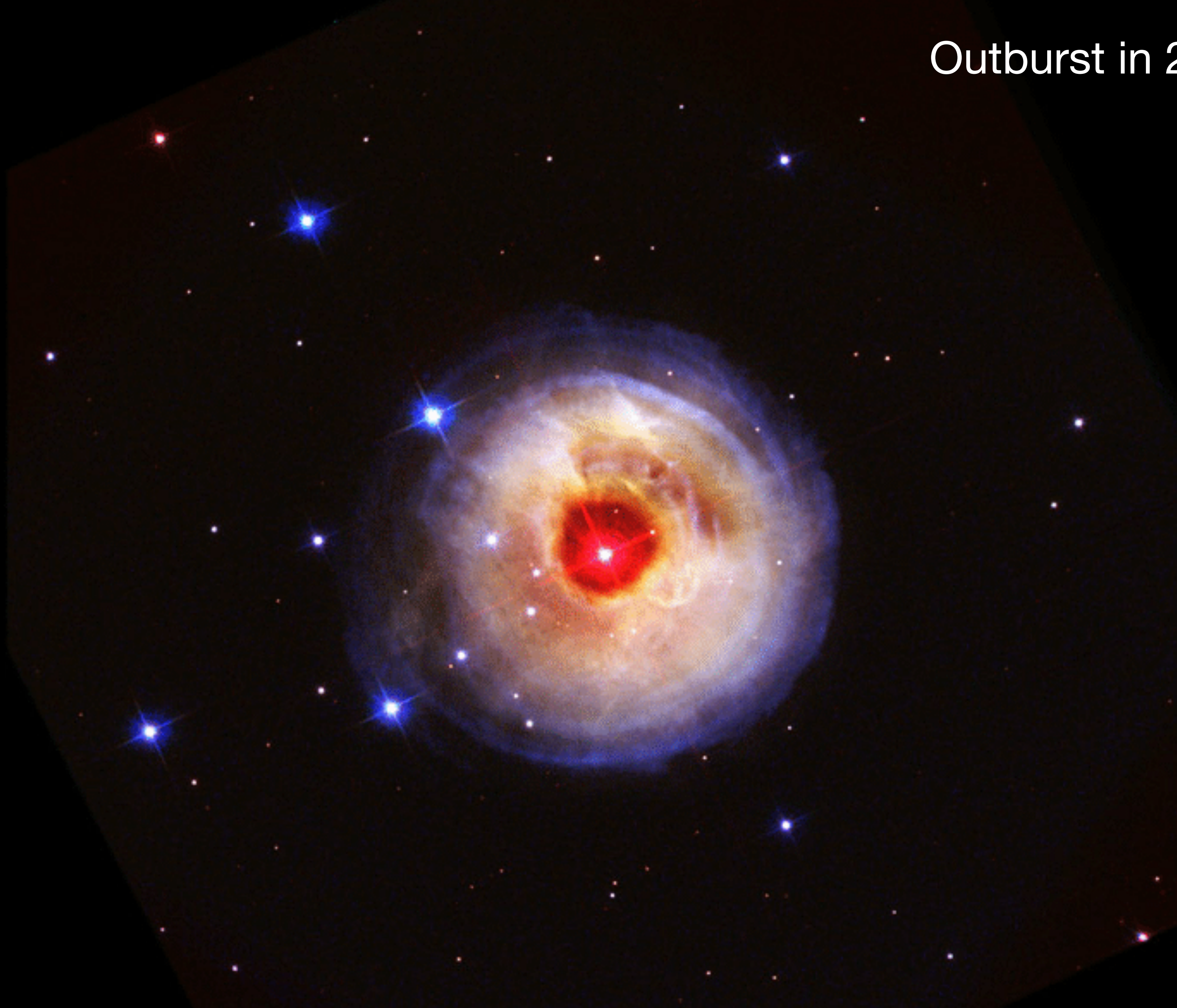
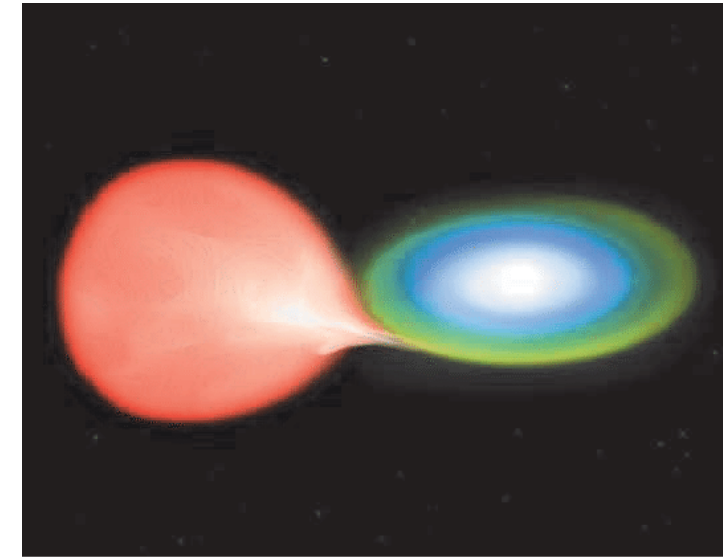


Outburst in 2002, $\sim 10^6 L_{\odot}$





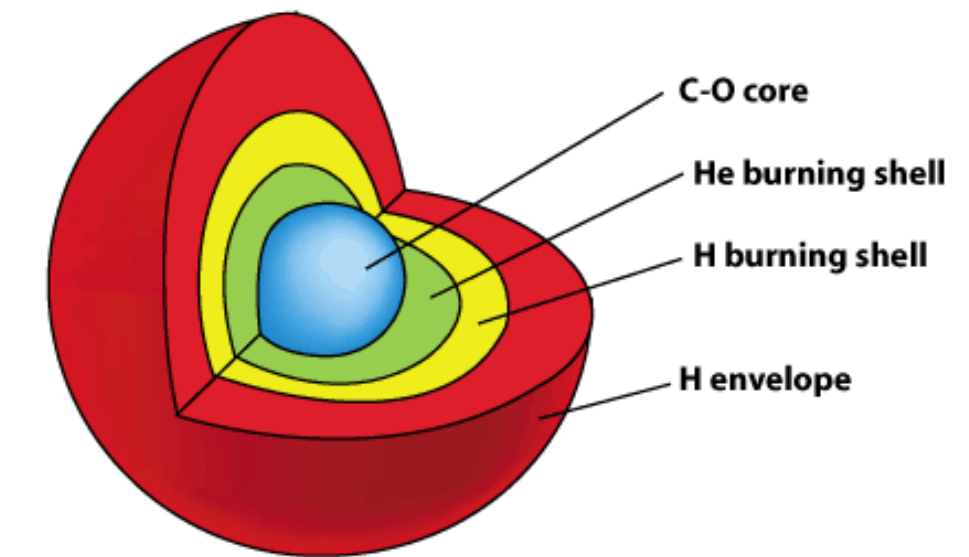
Nova?



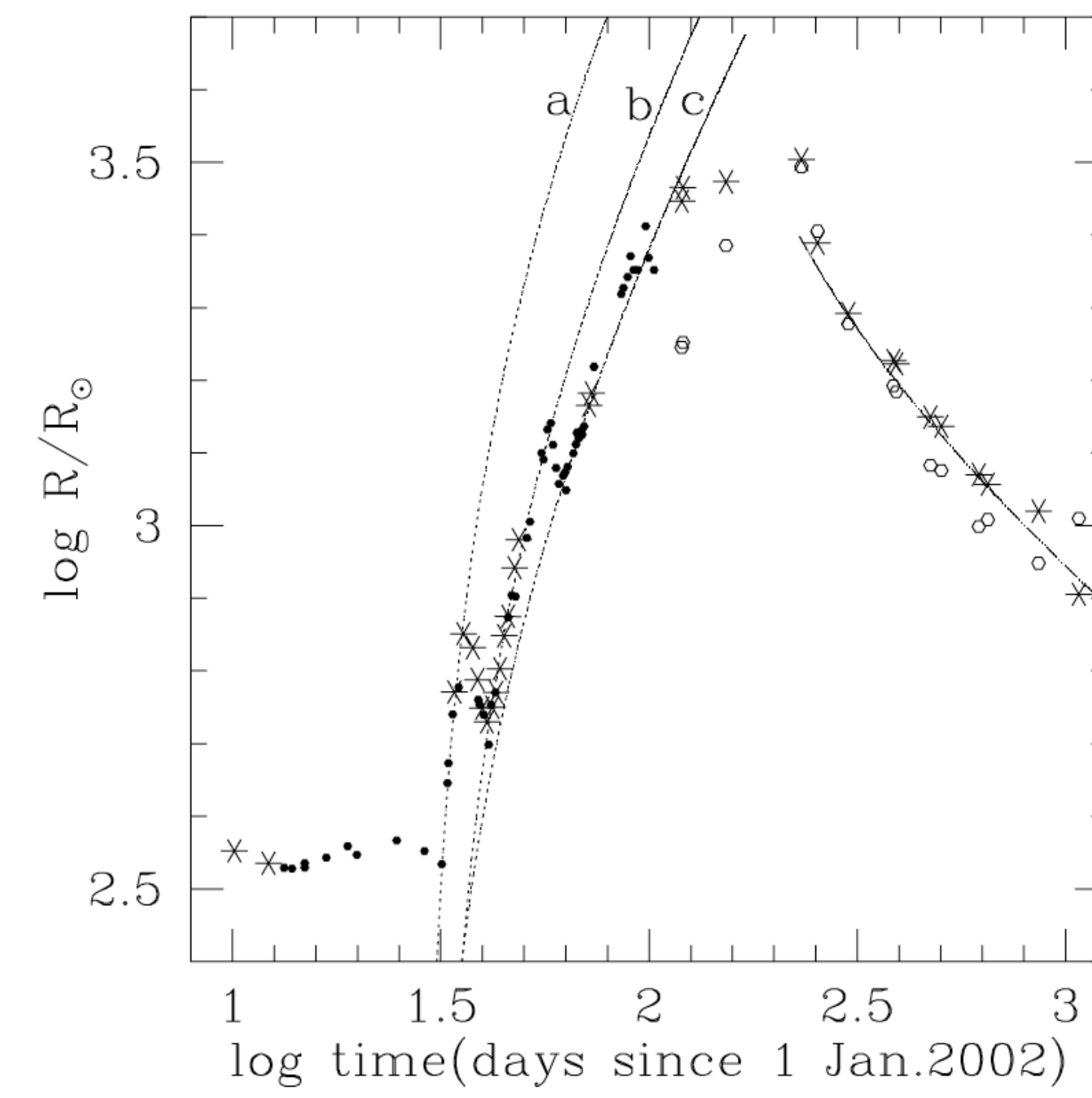
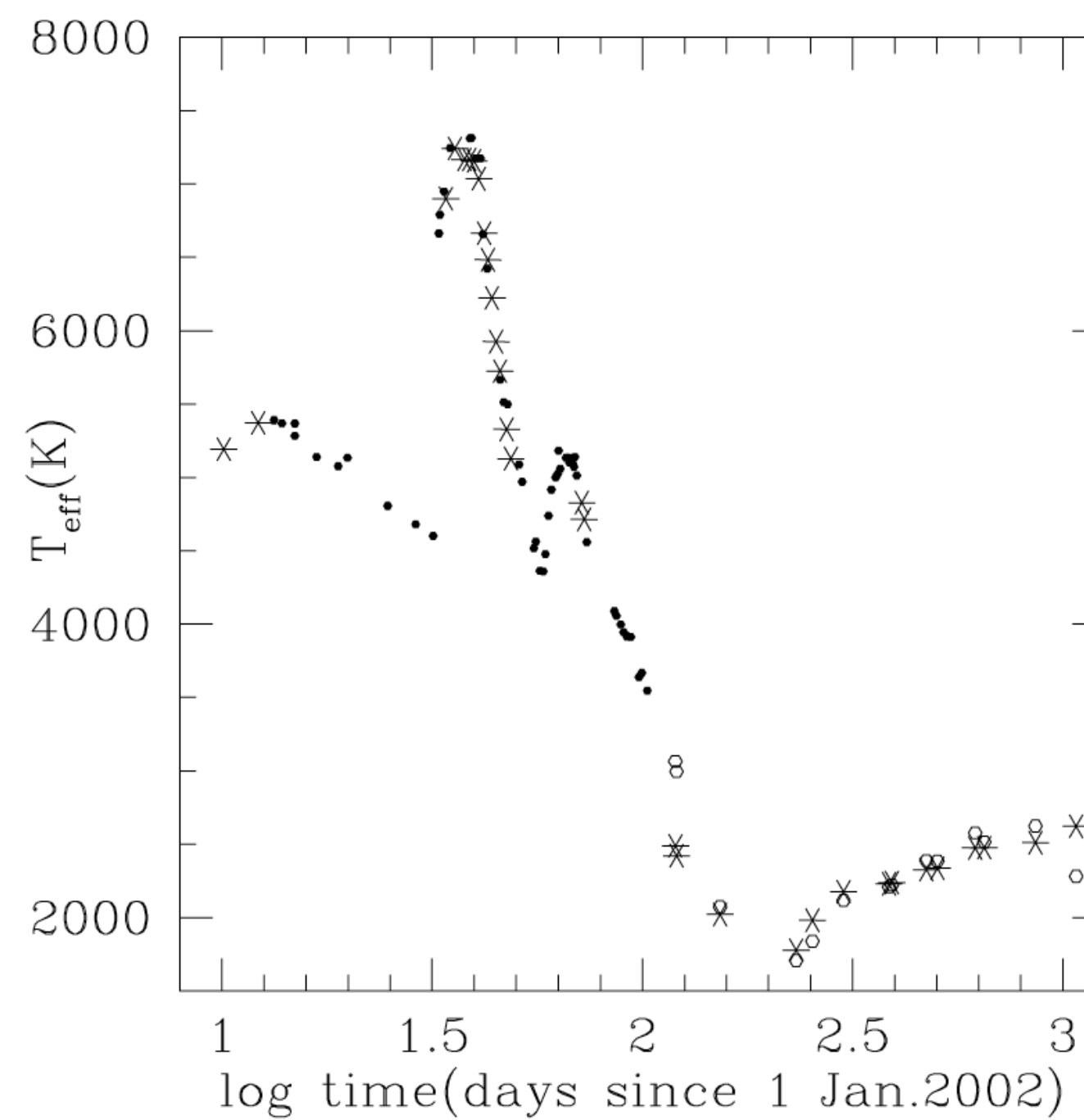
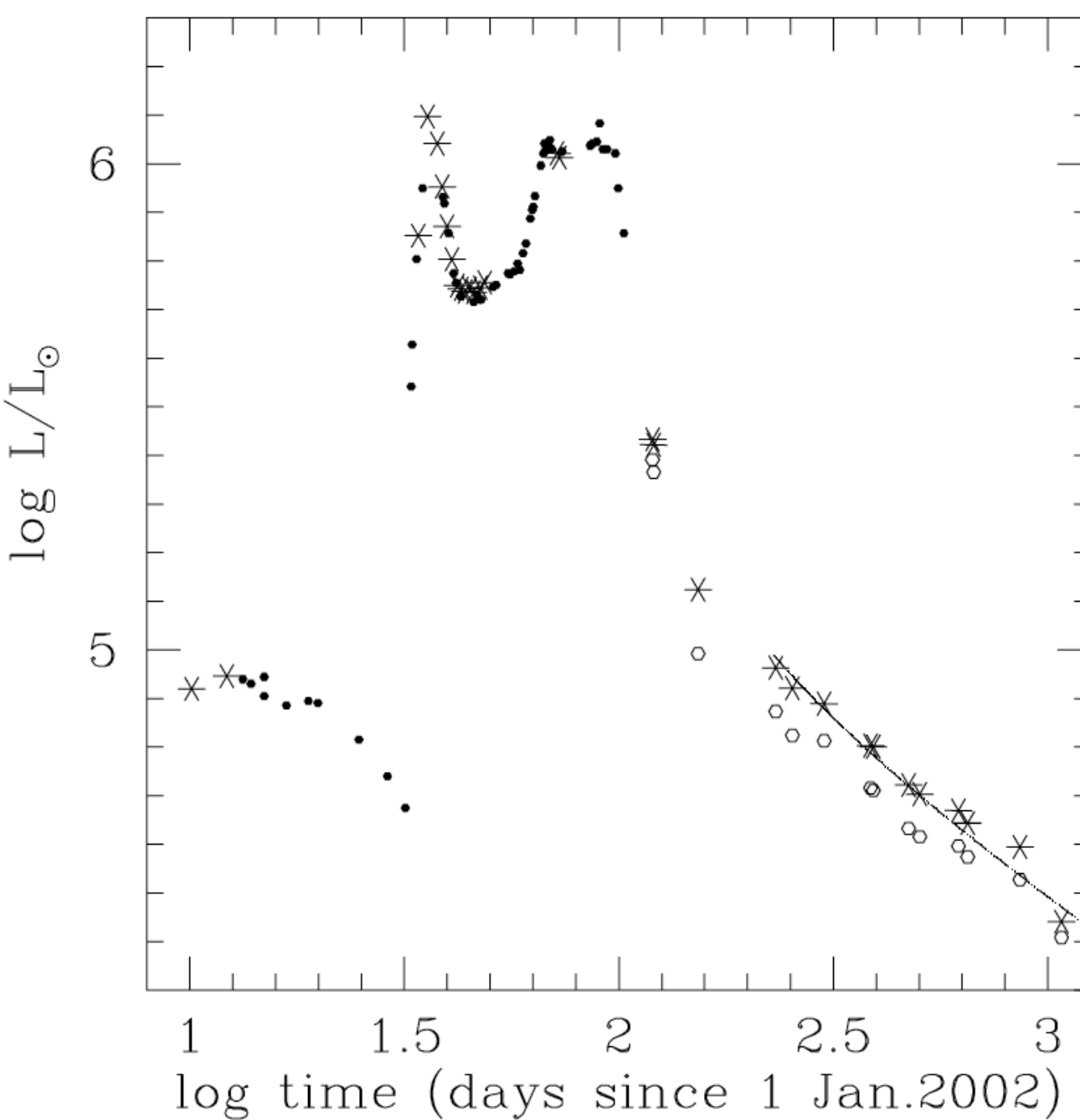
Planet eaten?

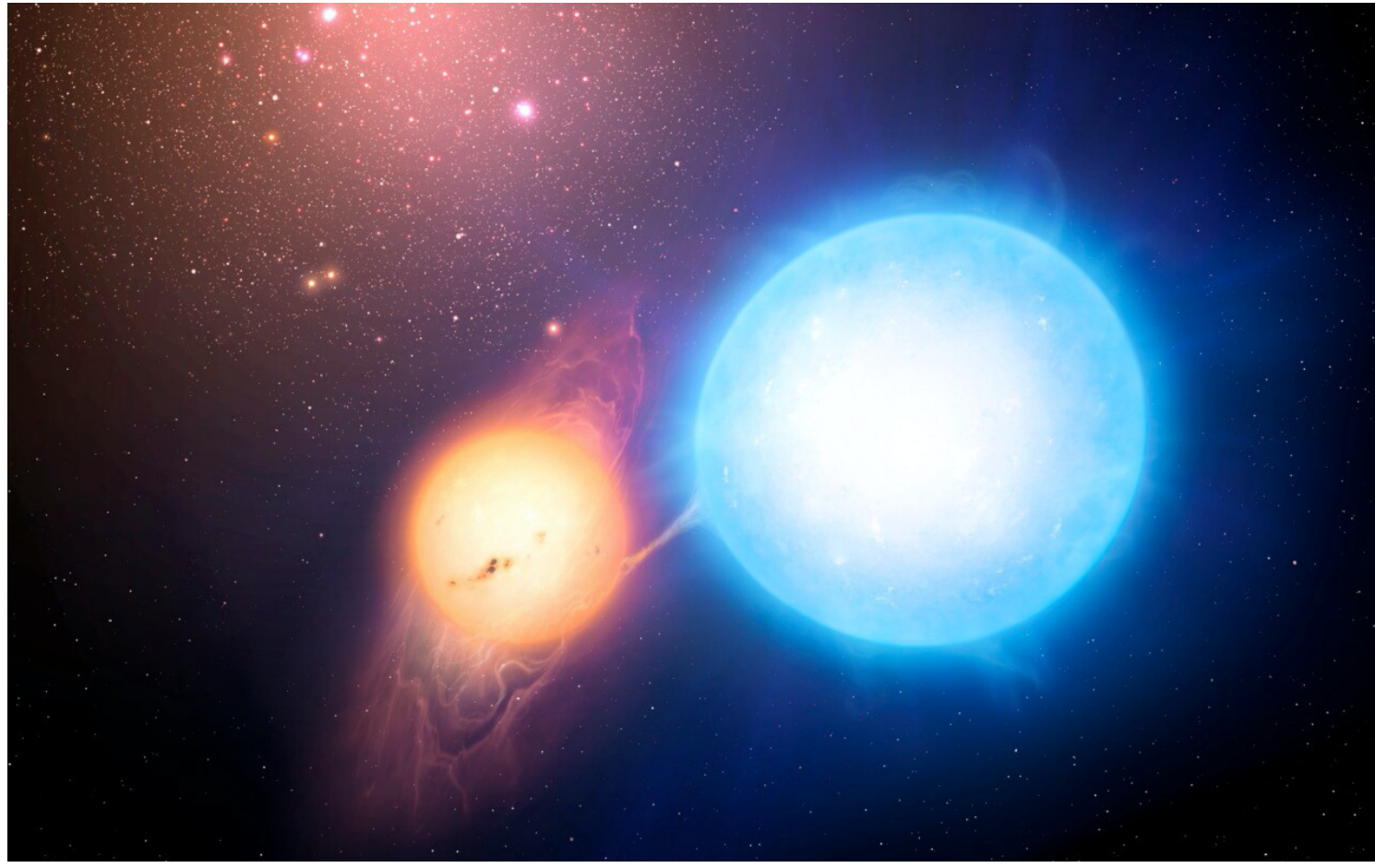


Re-born AGB?



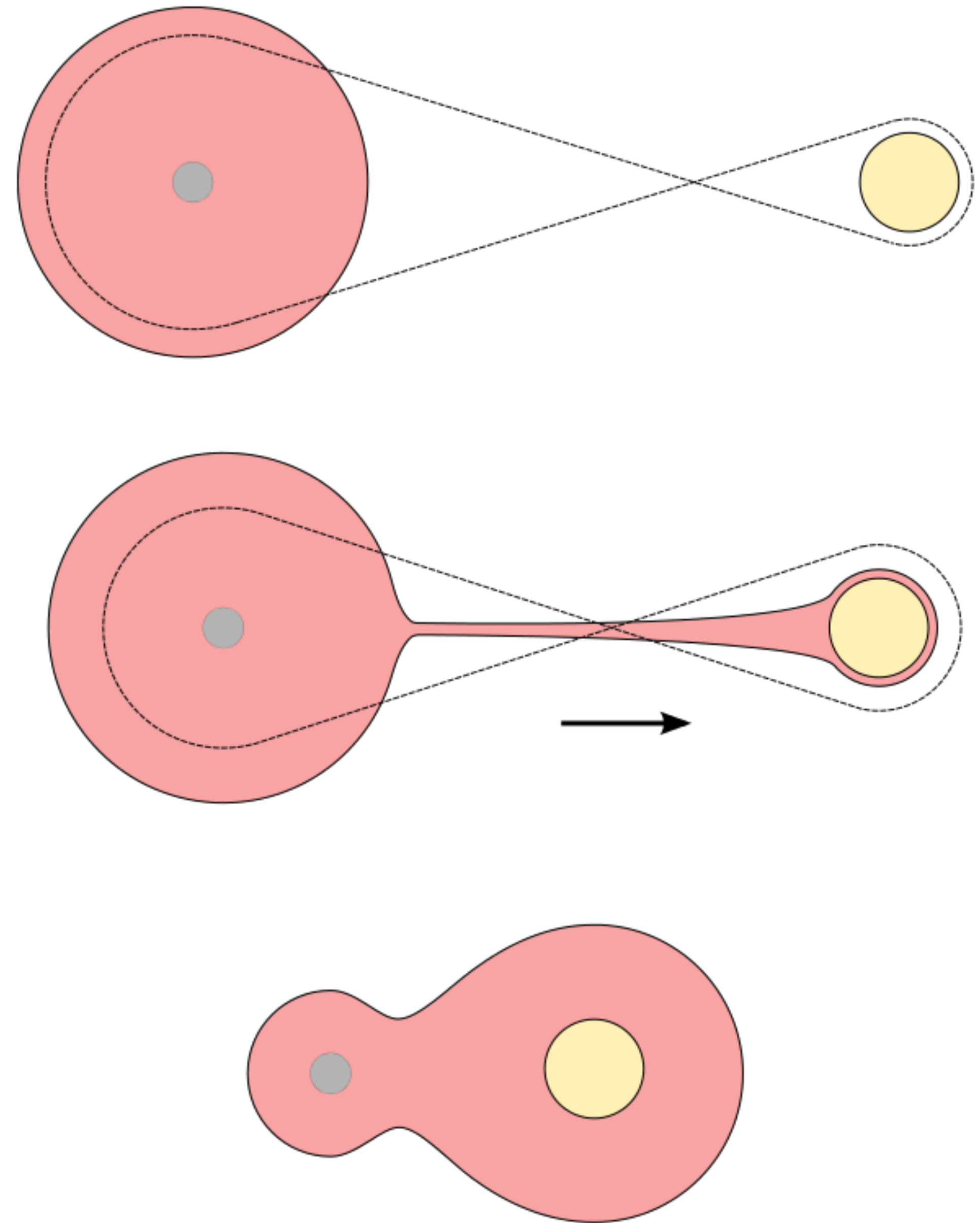
Stellar Merger!





Stellar merger of pre-MS and MS B type

$0.3 M_{\odot} + 8 M_{\odot}$ (Tylenda & Soker 2006)



Binary in a triple system

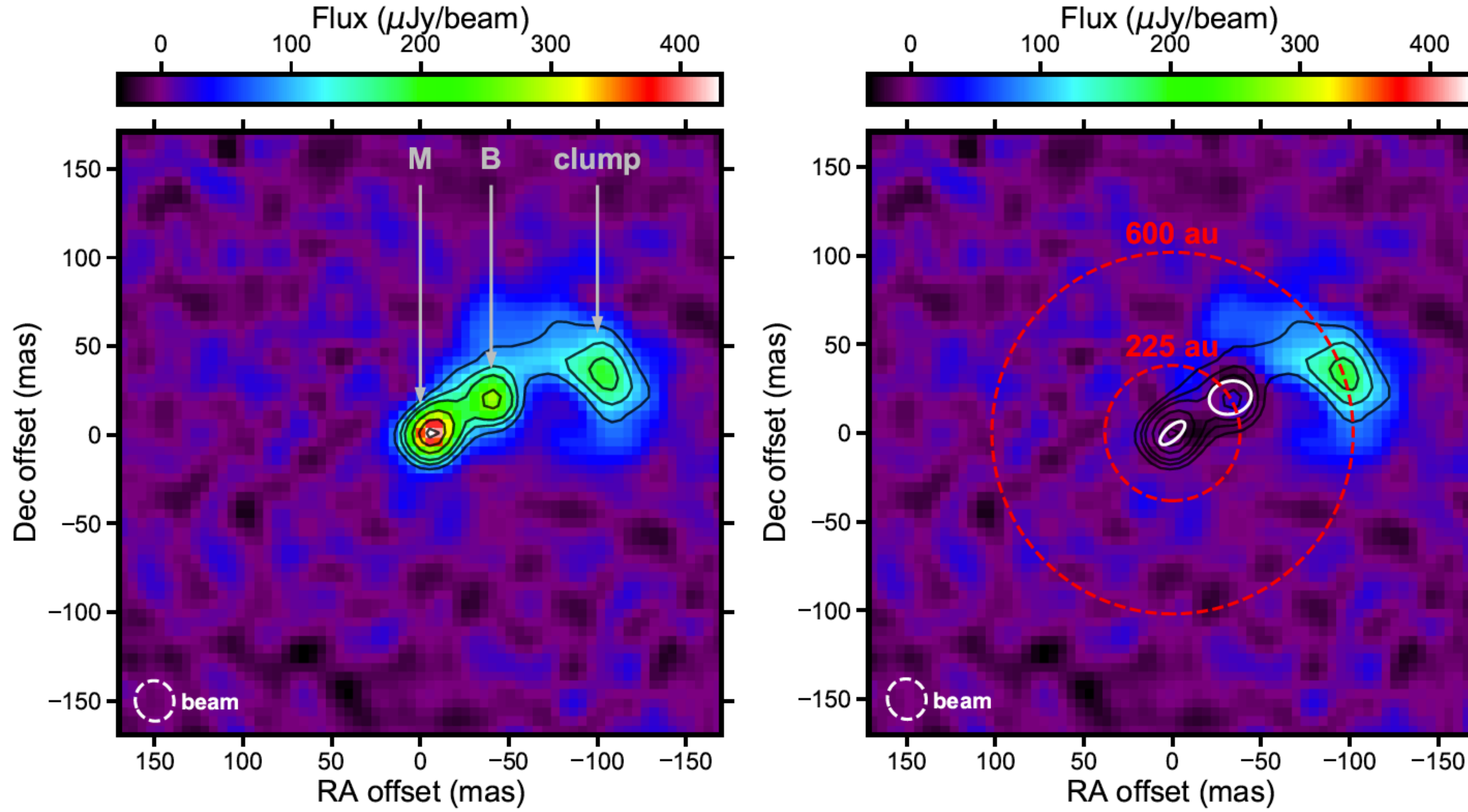


Fig. 1. Millimeter-wave emission of V838 Mon. Left: ALMA map at 1.3 mm with all discussed sources labeled. Right: Residual emission after a subtraction of the best-fit Gaussian components to M and B. Ellipses drawn with full line show the FWHM of the fitted Gaussian components. Ellipses with dashed line show FWHM of the restoring beam. Contours on both images show the original continuum emission at 0.2, 0.3, 0.4, 0.6, 0.8, and 0.95 times the peak emission. The maps have the same colorscale. The spatial offsets are with respect to the best-fit central position of the M component.

VLTI and CHARA



Largest baseline ~ 140 m

MATISSE (LM) and GRAVITY (K)

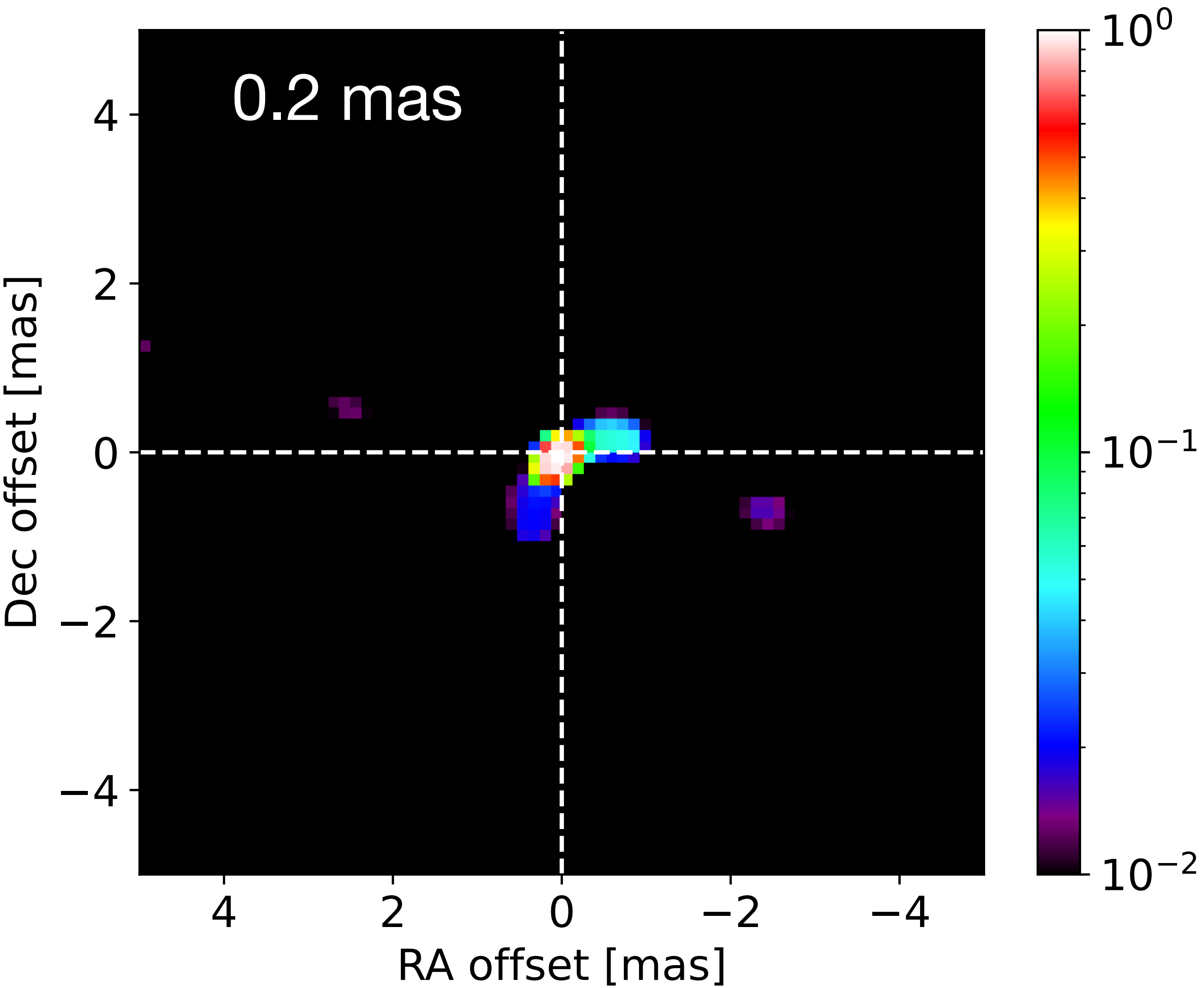


Largest baseline ~ 330 m

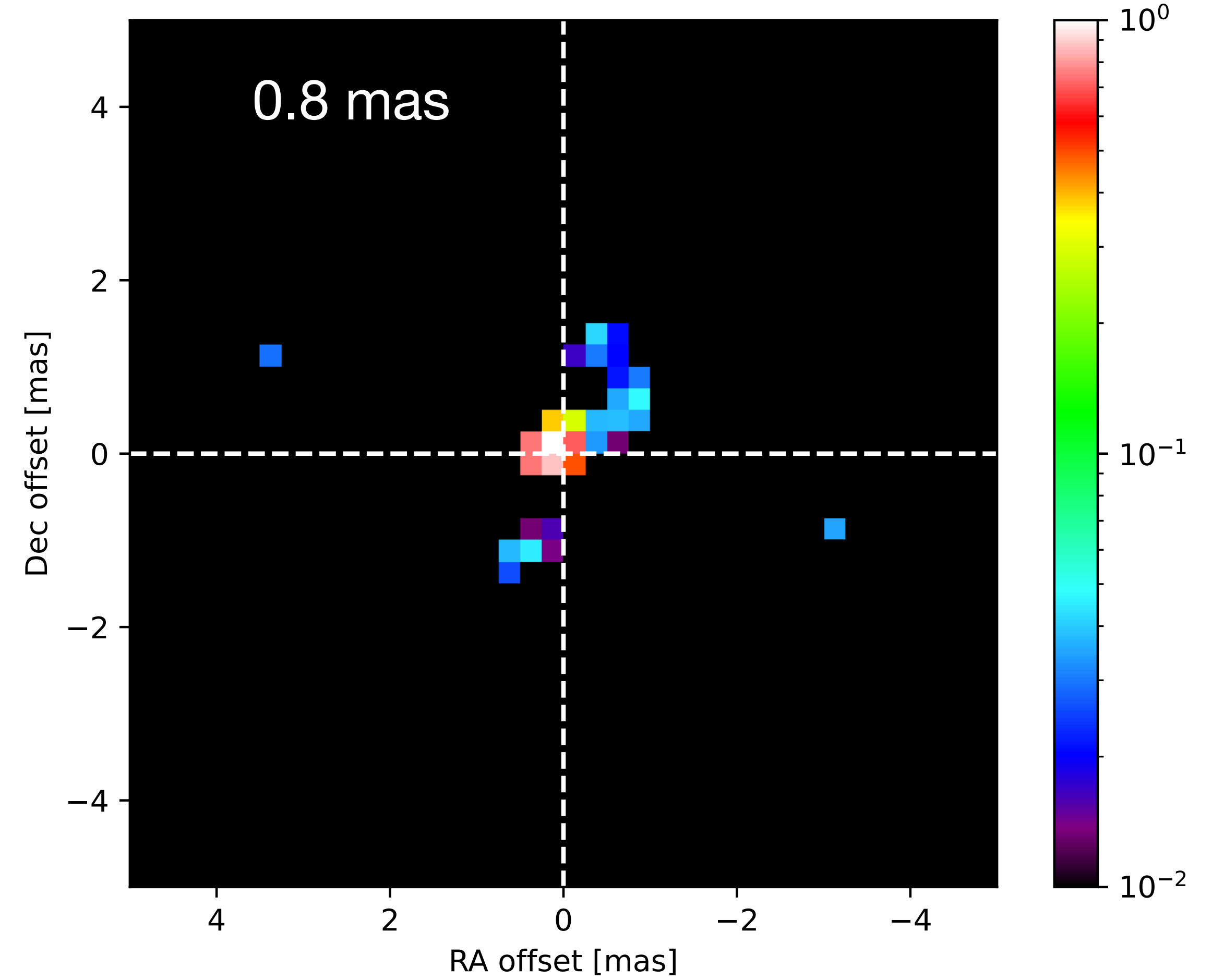
MIRCX/MYSTIC (HK)

Image Reconstructions

CHARA



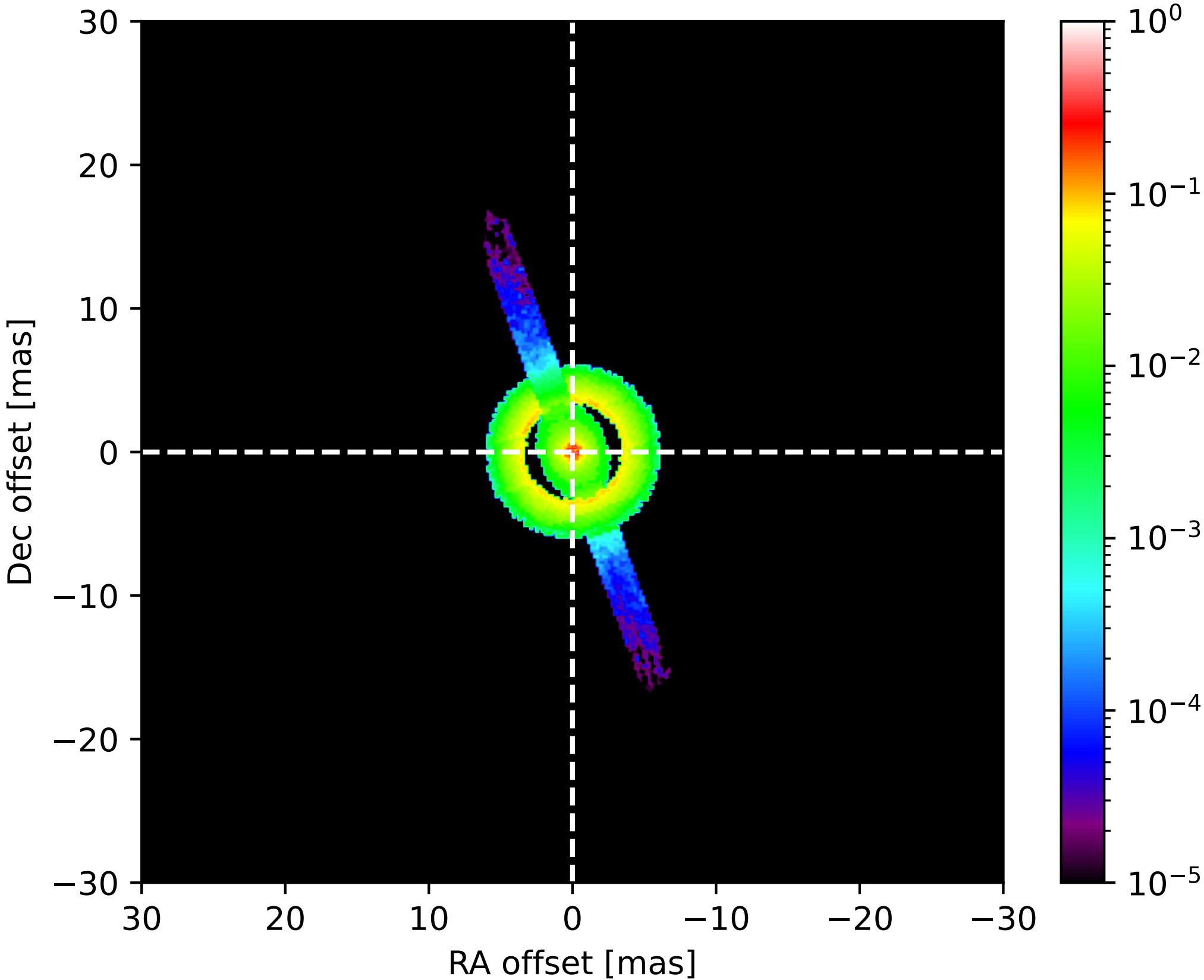
GRAVITY



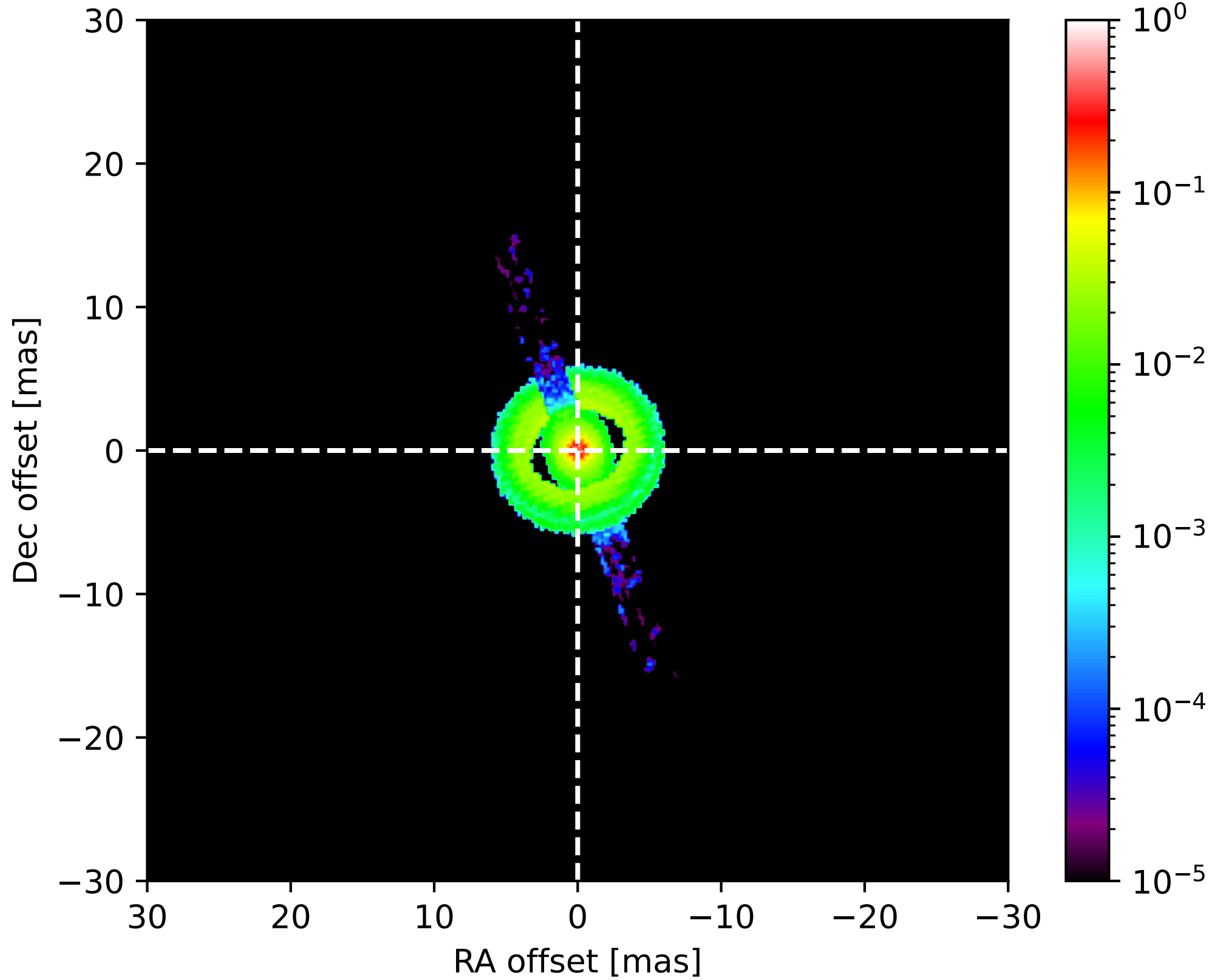
Mobeen et al 2024

Asymmetric bi-polar features in the HK bands!

RADMC3D Models

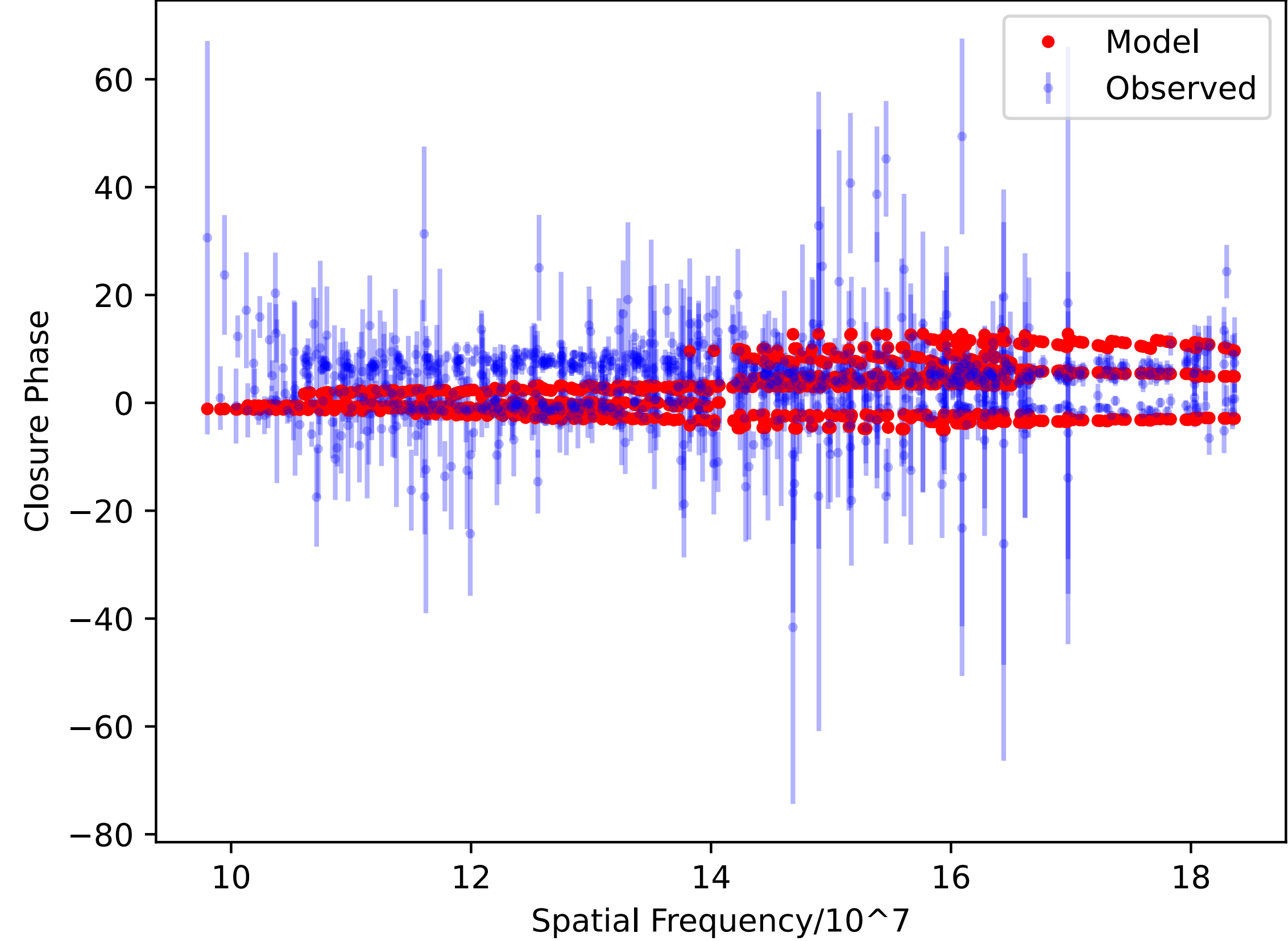


H Band

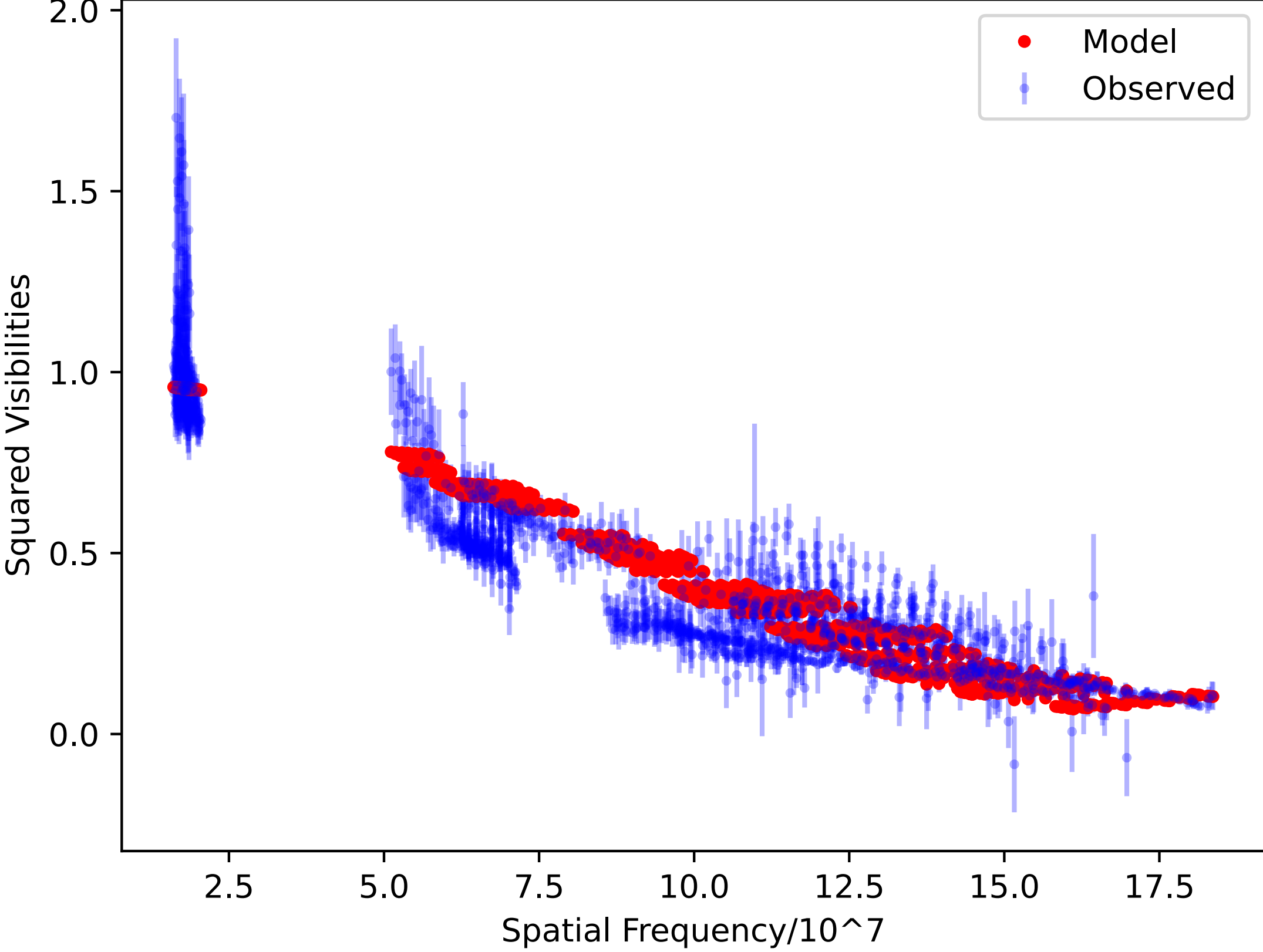


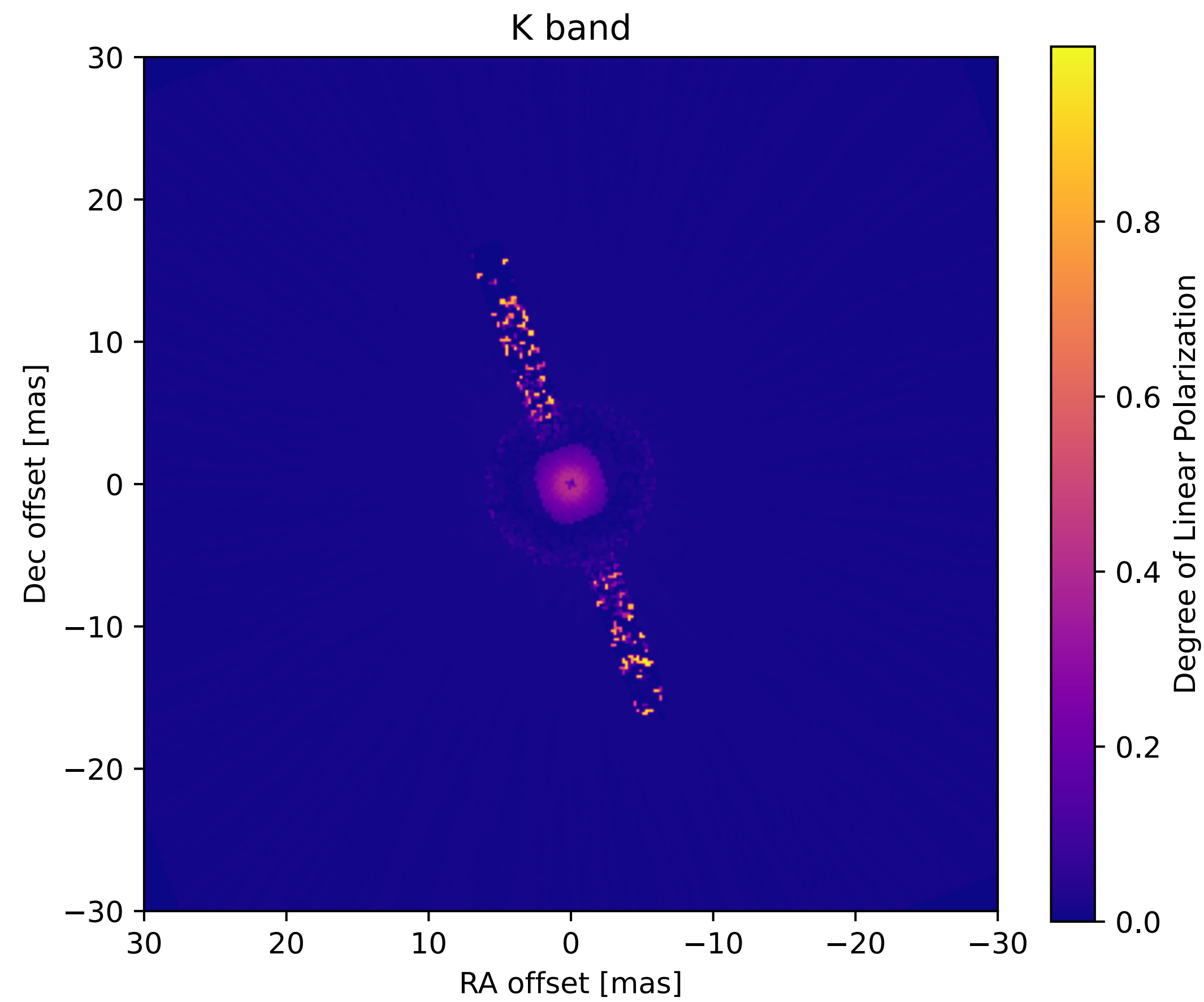
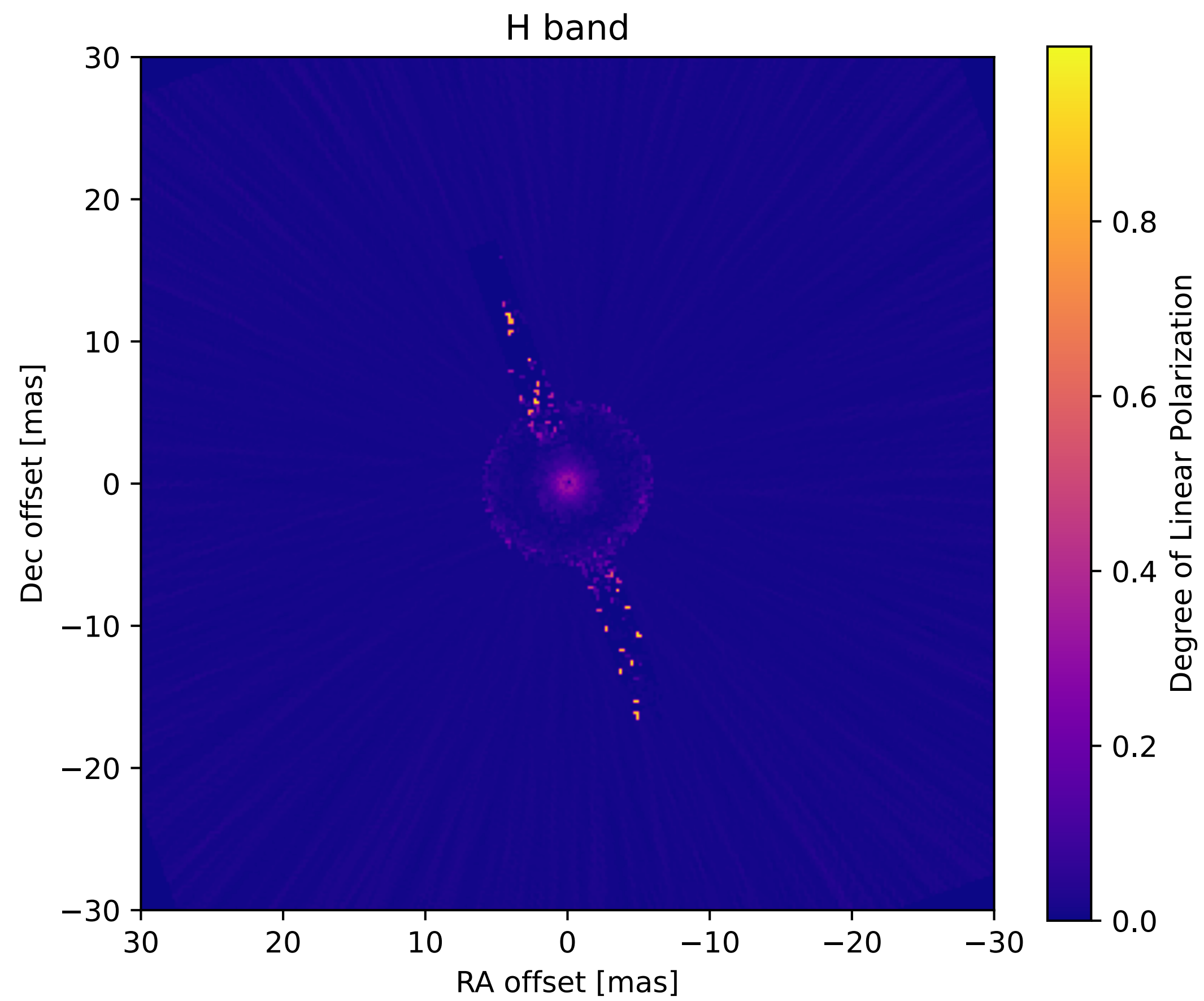
K Band

Modeled vs Observed Closure Phases



Modeled vs Observed Visibilities





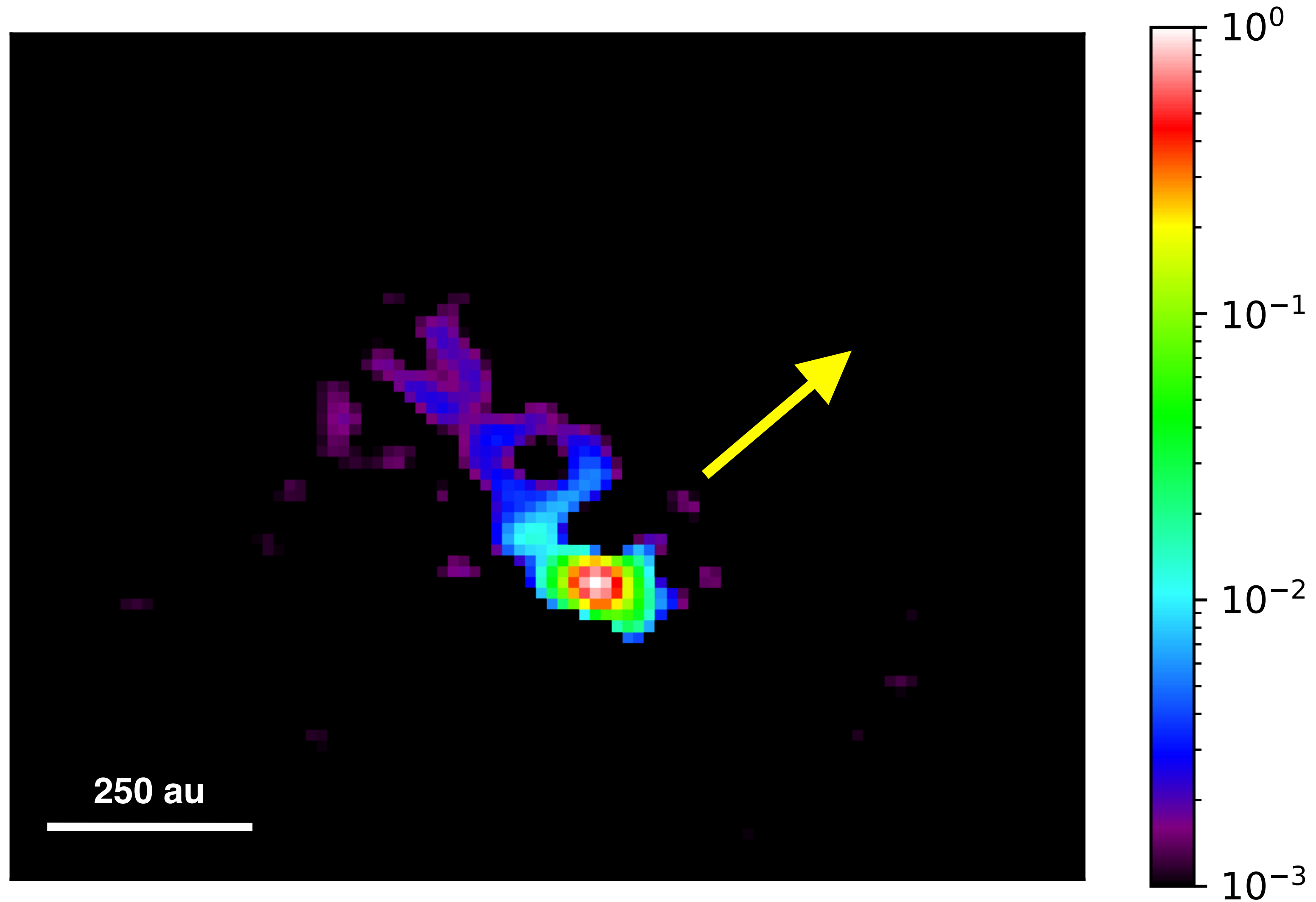
$<2\%$

Table 1. Polarization results for our SAAO-HIPPO observations in 2021.

Band	P_T [%]	PA °	P_{ISM} [%]	P_{int} [%]	PA_{int} °
<i>B</i>	4.105 ± 1.333	170.584 ± 11.866	2.582 ± 0.013	1.807 ± 2.841	15.55 ± 30.26
<i>V</i>	3.824 ± 0.229	155.963 ± 2.422	2.738 ± 0.011	1.095 ± 0.471	-17.61 ± 8.52
<i>R</i>	3.095 ± 0.102	155.371 ± 1.324	2.710 ± 0.012	0.397 ± 0.498	-11.053 ± 10.66
<i>I</i>	2.419 ± 0.091	158.807 ± 1.522	2.469 ± 0.014	0.236 ± 0.767	78.37 ± 22.16

Notes. P_T , PA , P_{ISM} , P_{int} , PA_{int} are the total polarization, position angle, ISM polarization, intrinsic polarization, and the position angle of the intrinsic polarization, respectively. P_{ISM} was calculated for the observed wavelengths from the Serkowski’s law fit in Wisniewski et al. (2003a) and PA of 153°43 was adopted for the ISM component after Wisniewski et al. (2003a).

Gemini North (i band)



c Steve Howell

VV Cep

