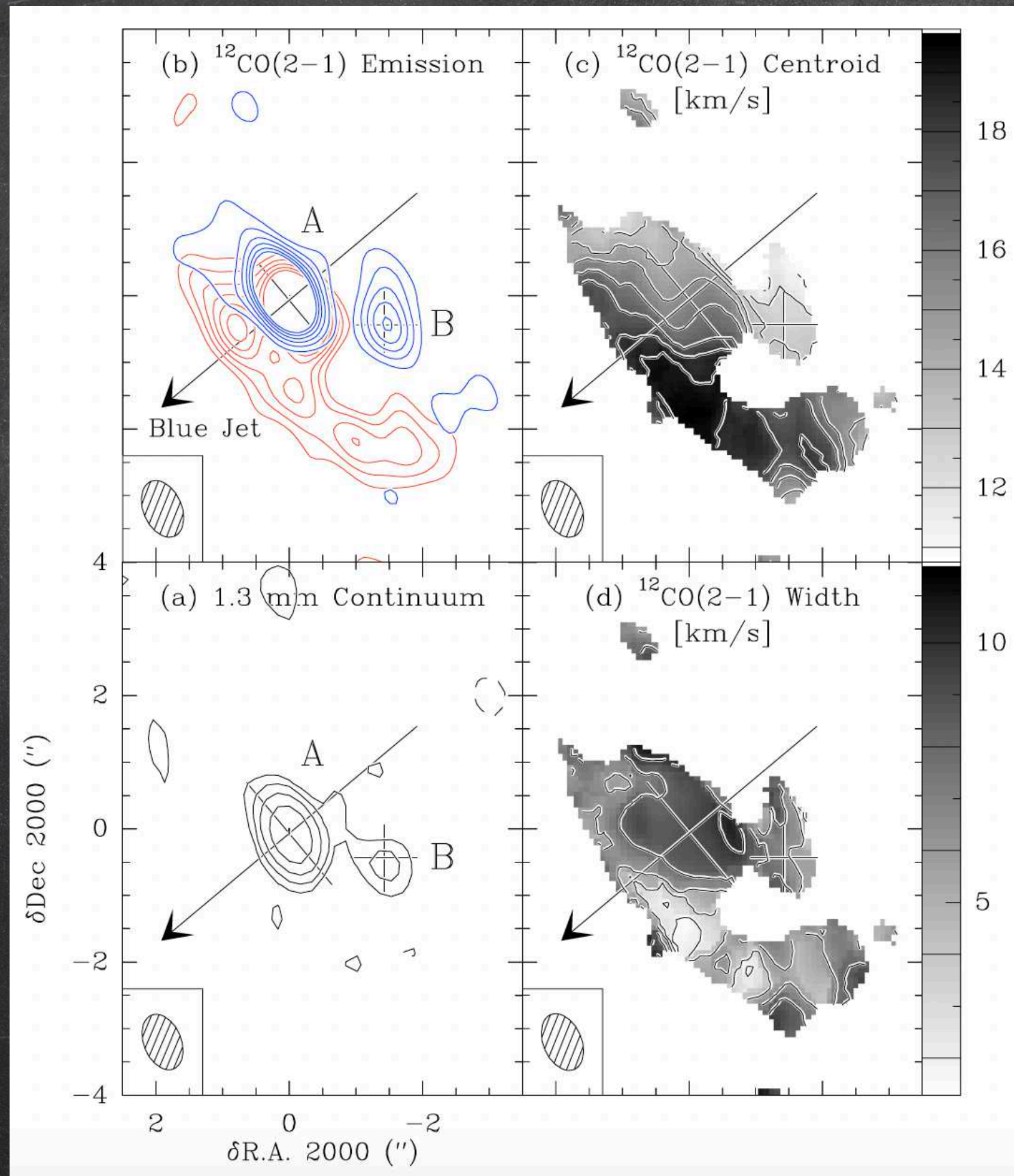


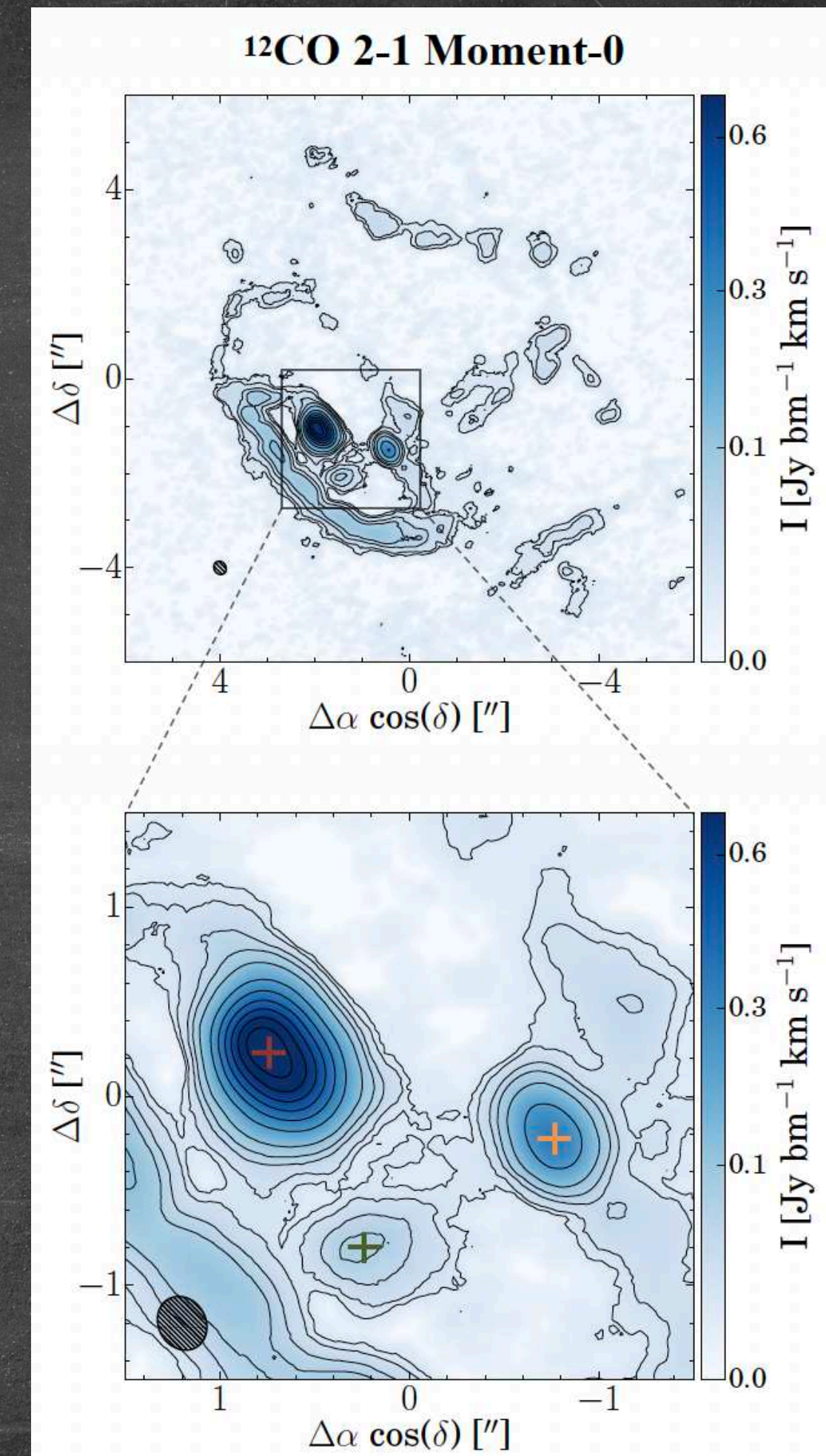
When expectation meets reality: RW Aurigae simulation intrigues

Elisabeth Borchert
<https://emborchert.github.io>

RW Aurigae observations

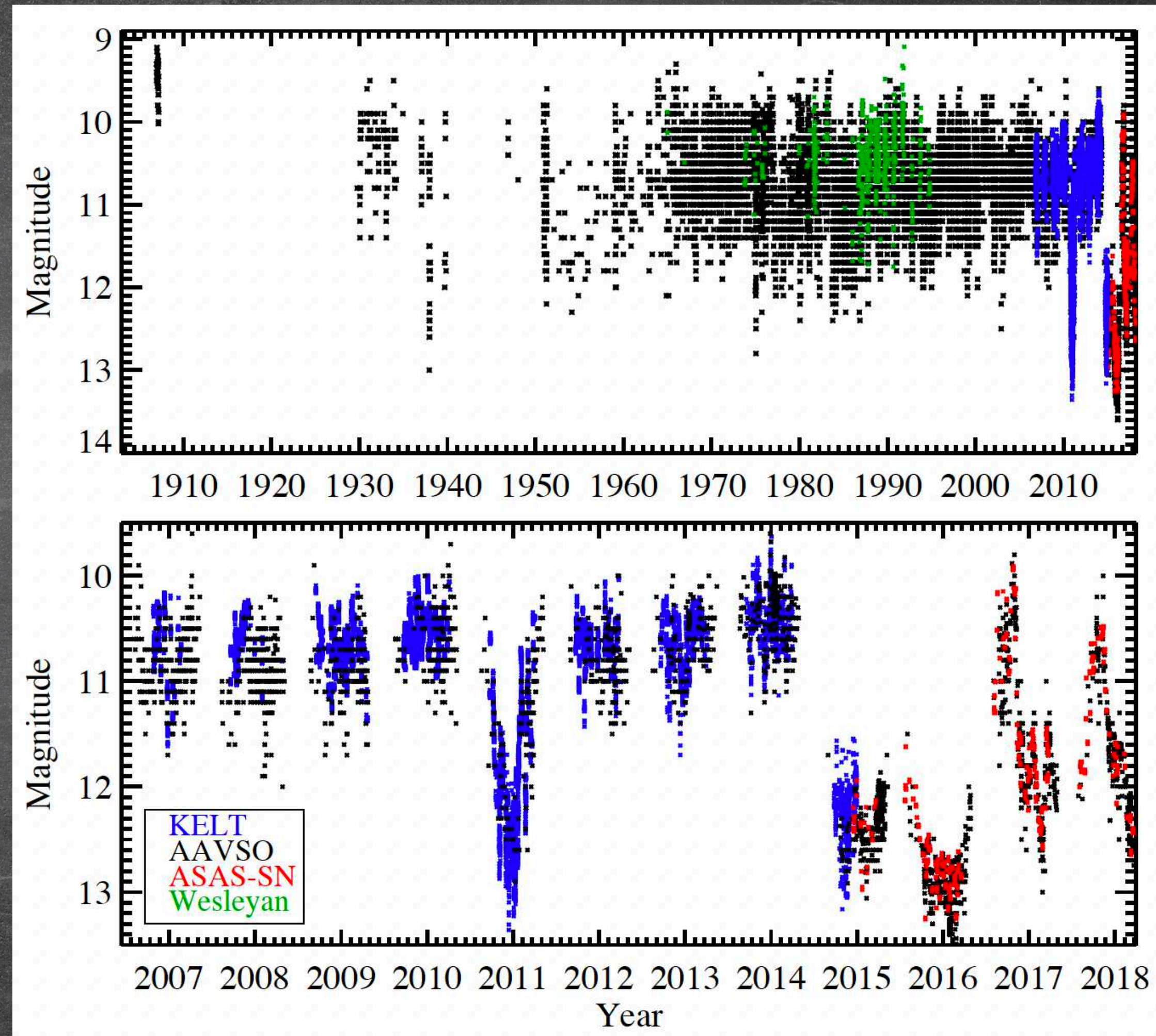


[Cabrit et al. 2006]



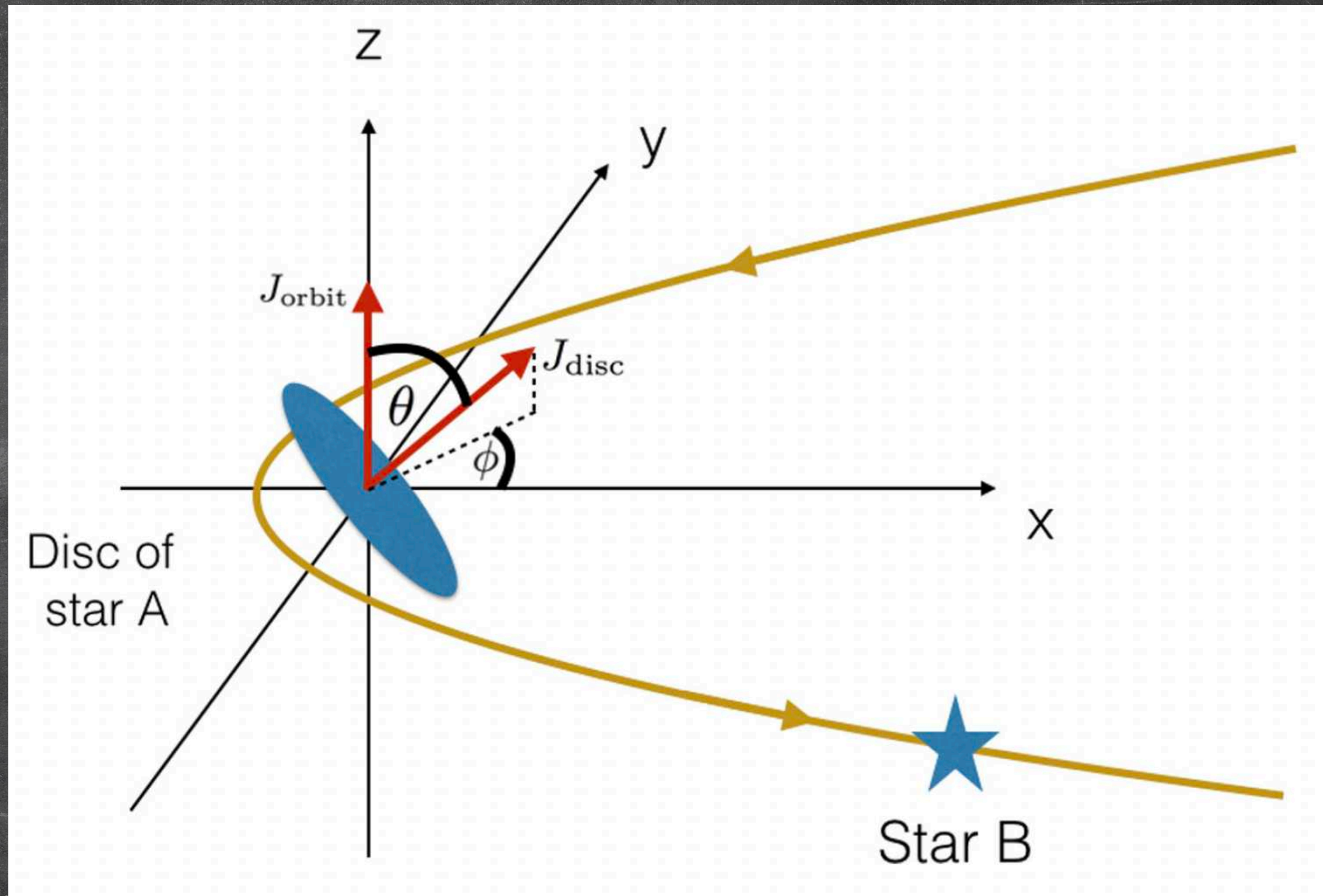
[Rodriguez et al. 2018]

RW Aurigae dimming events



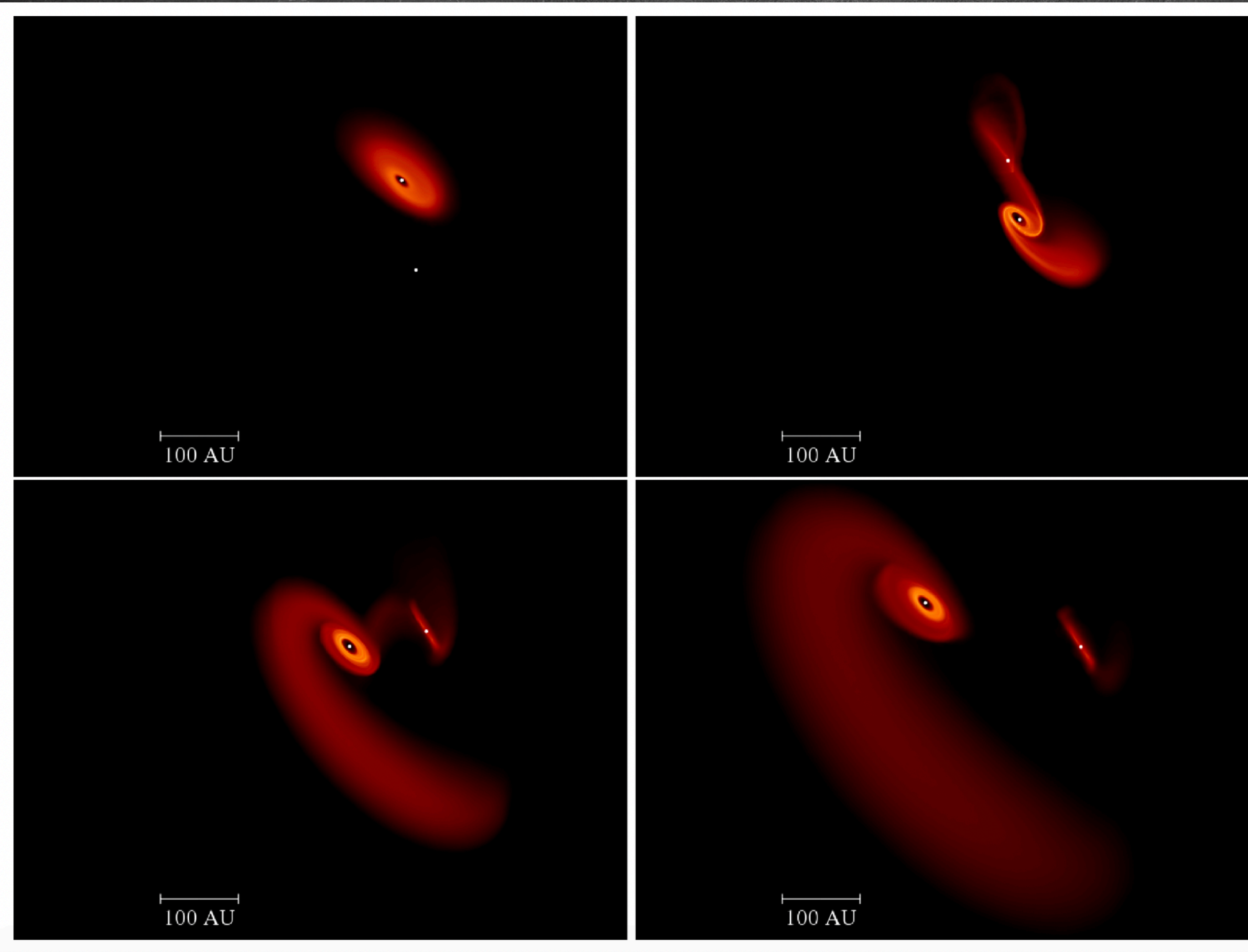
[Rodriguez et al. 2018]

Past modelling results

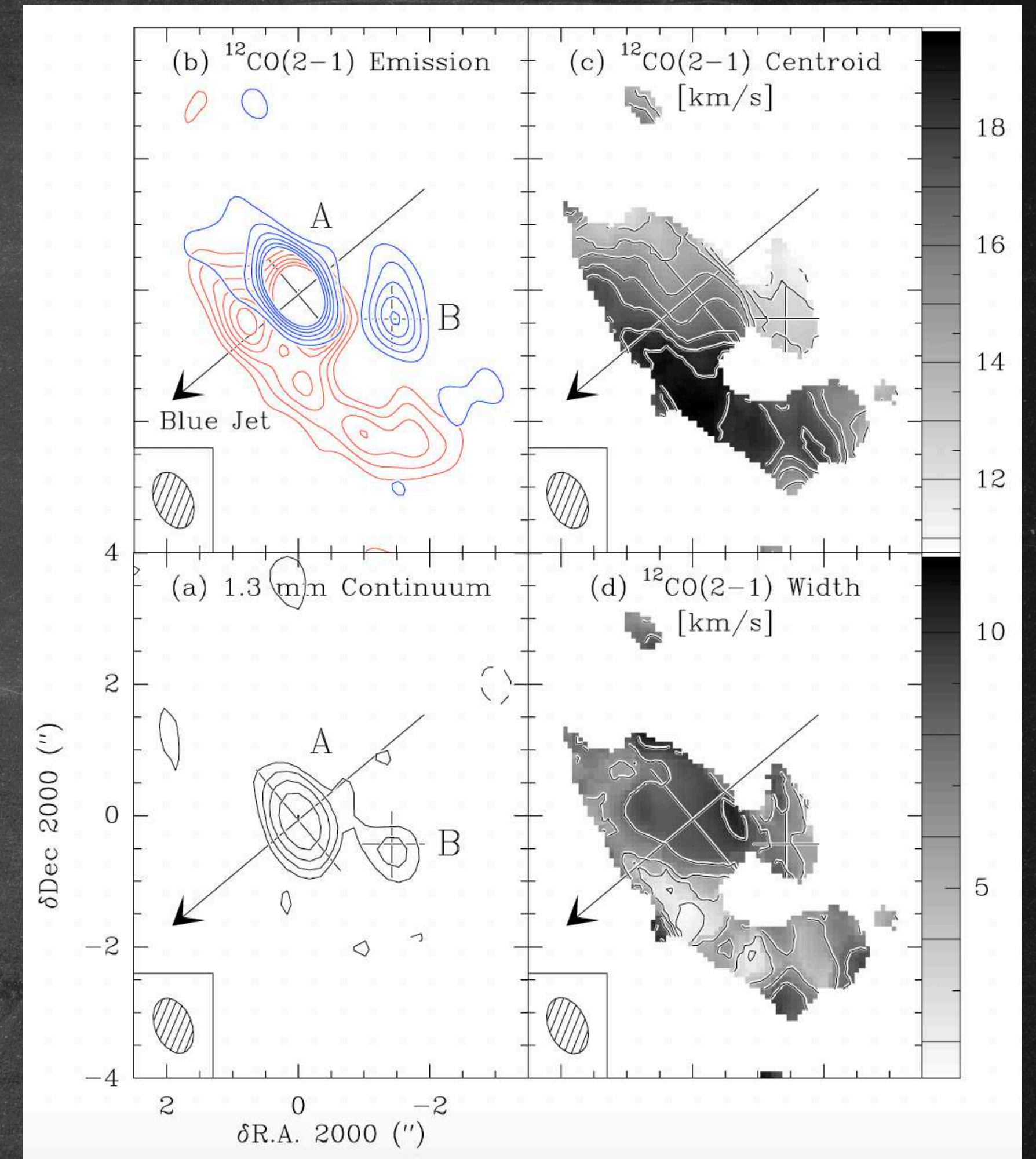


[Dai et al. 2015]

Past modelling vs observations

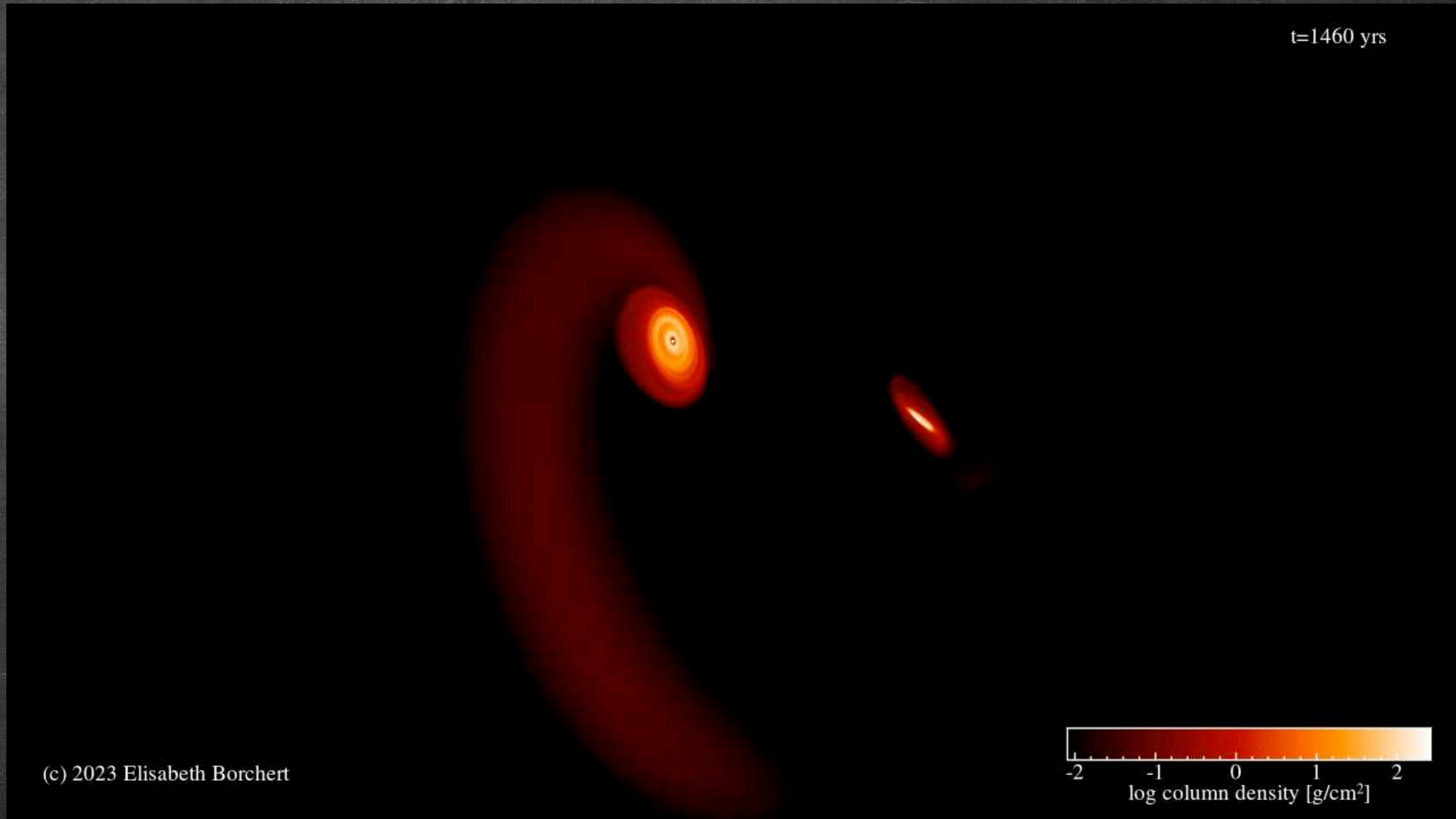


[Dai et al. 2015]

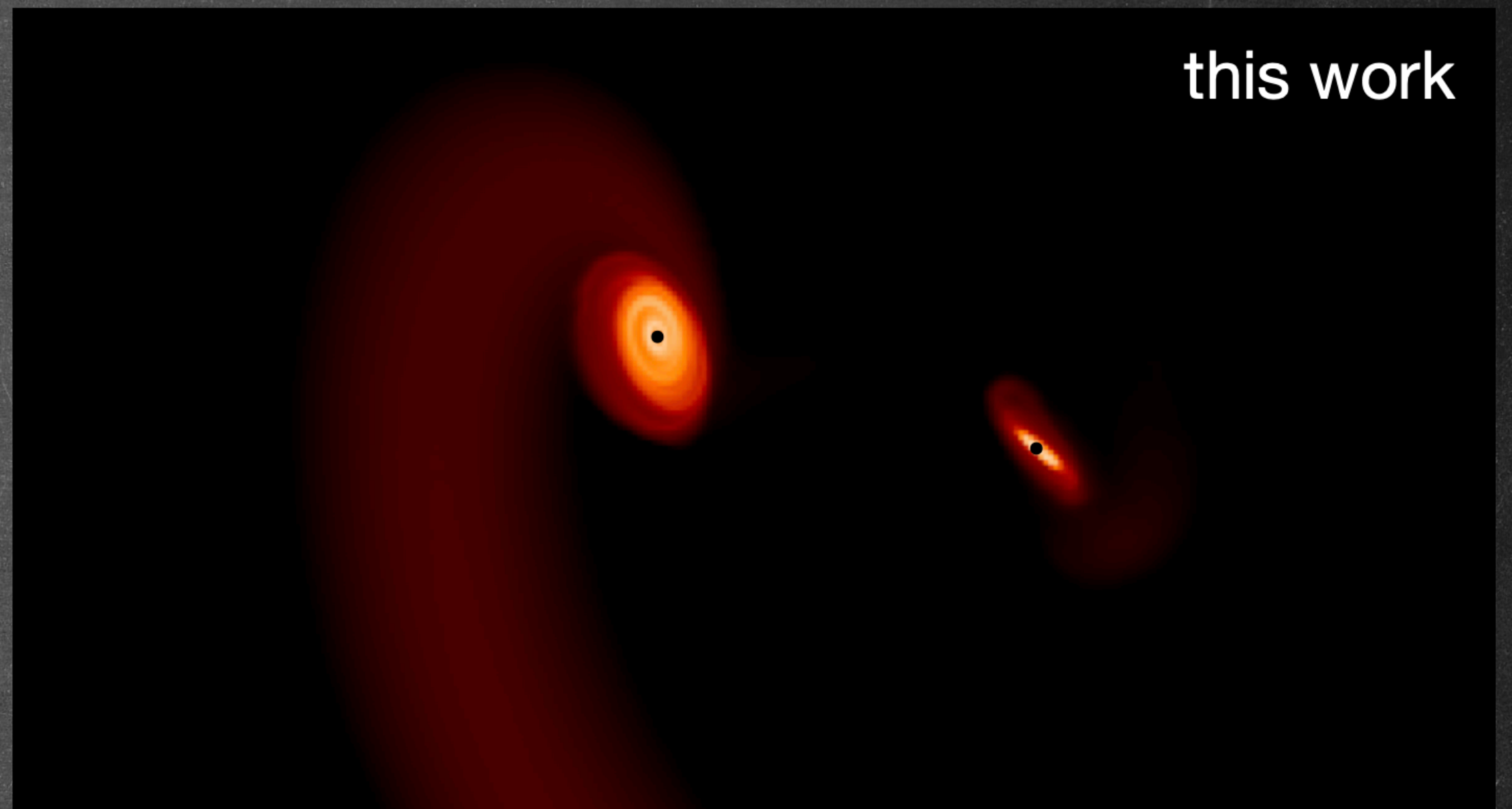
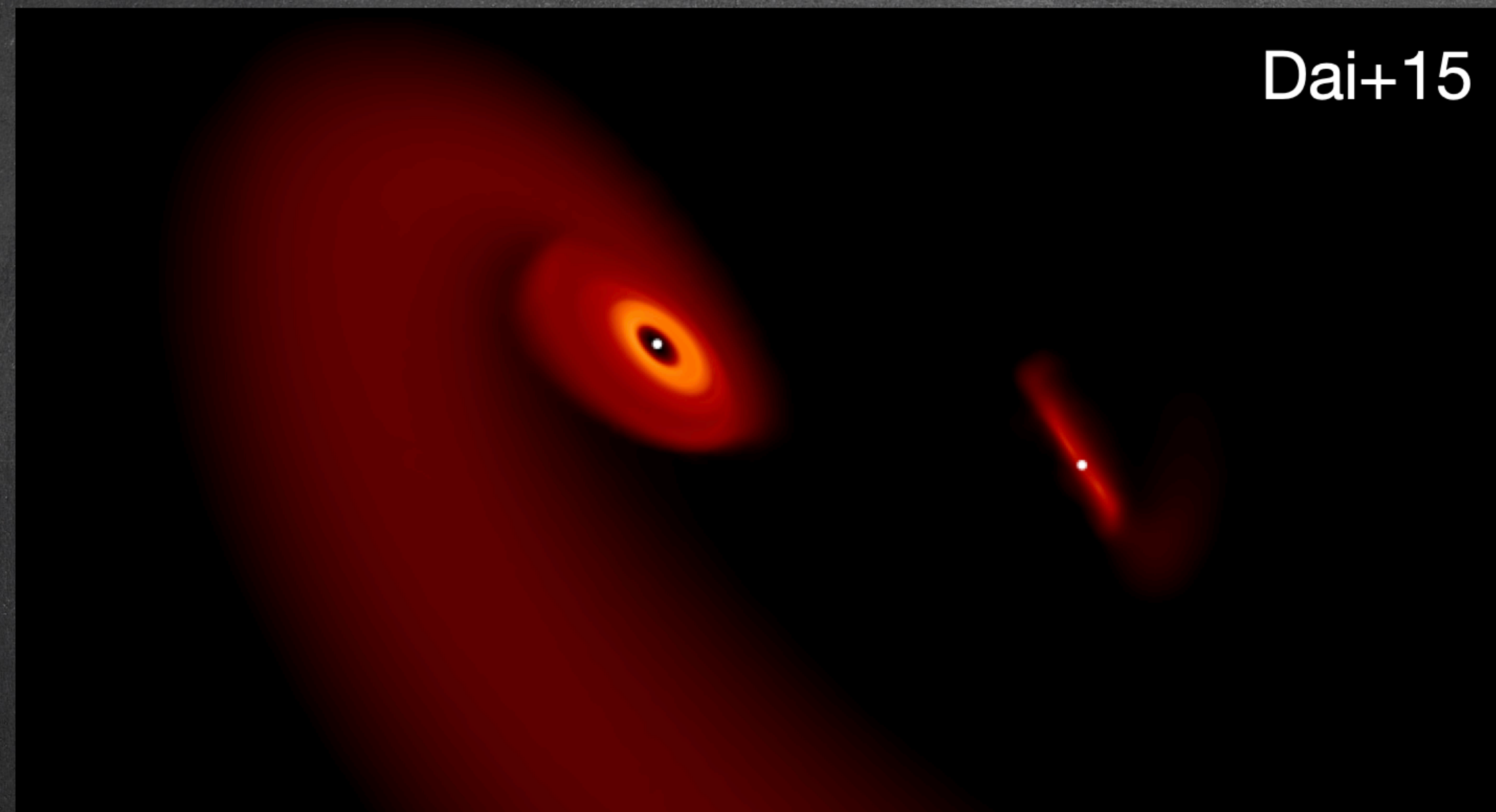


[Cabrit et al. 2006]

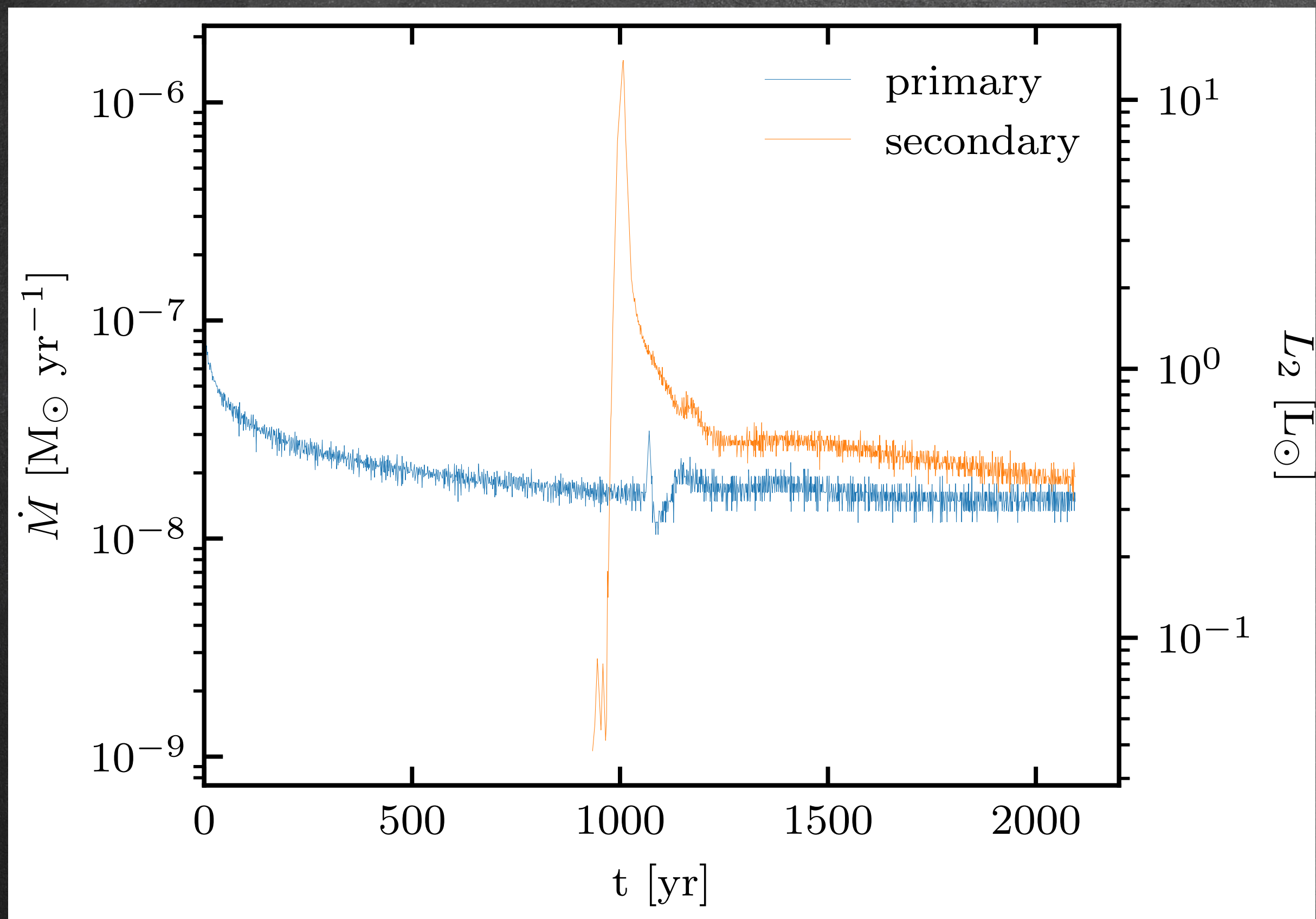
My simulation



Observation angle



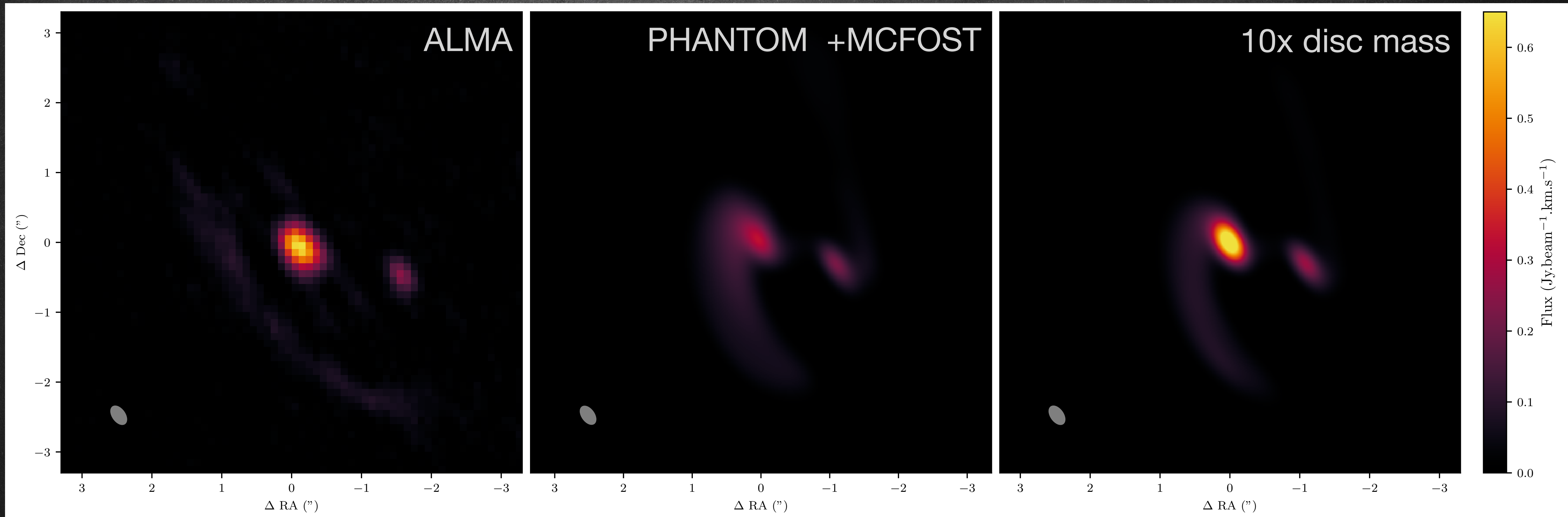
Accretion rate



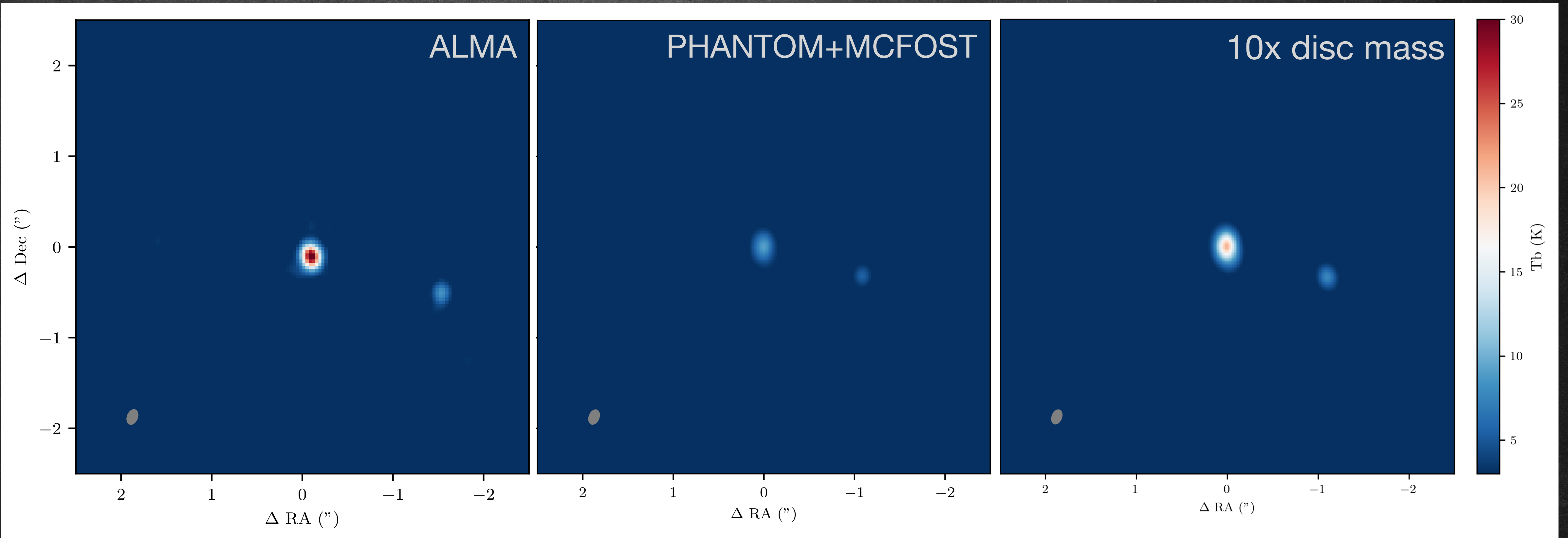
Obs. accretion rates:

- RW Aur A: $\dot{M} = (2 - 10) \times 10^{-7} M_{\odot} \text{ yr}^{-1}$
- RW Aur B: $\dot{M} = (1 - 50) \times 10^{-10} M_{\odot} \text{ yr}^{-1}$

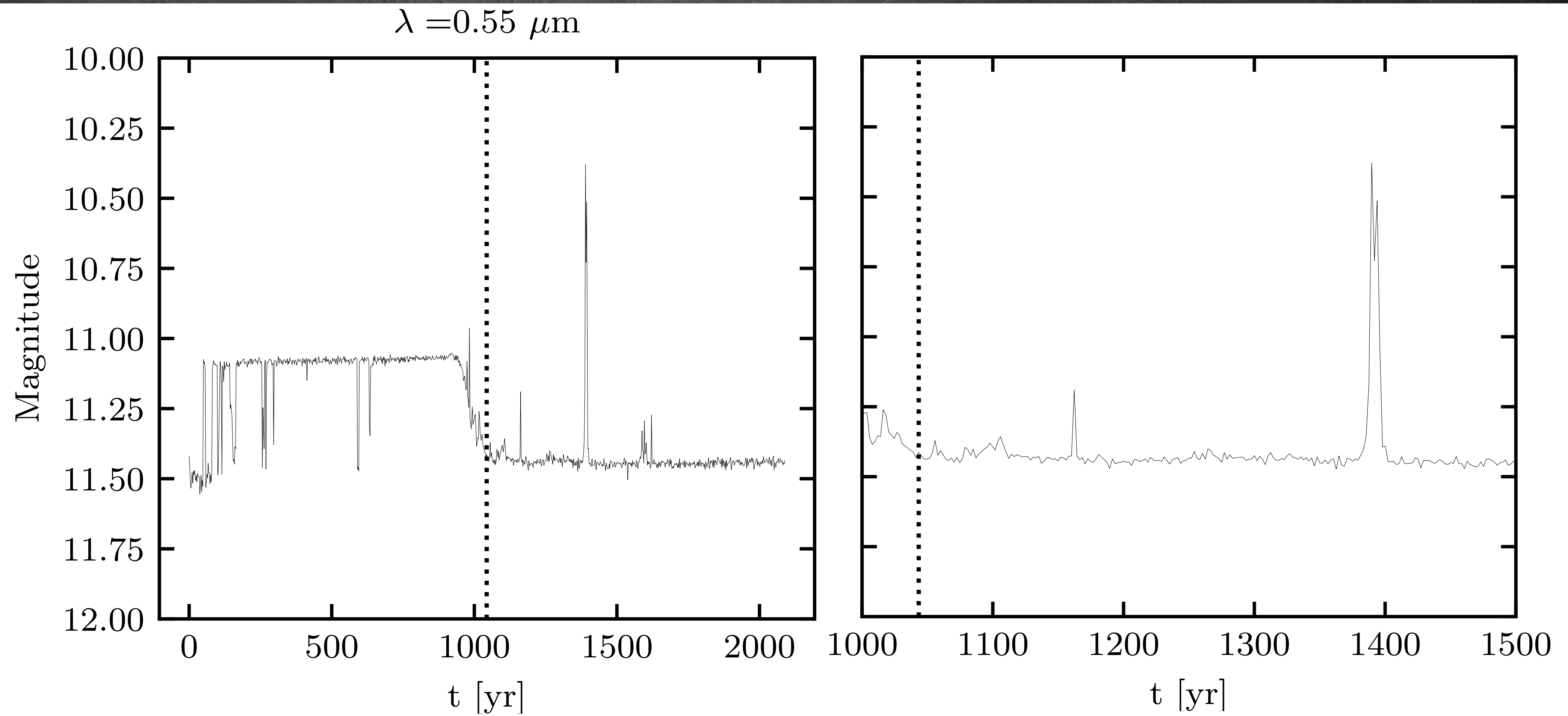
CO(2-1) mom-0 maps



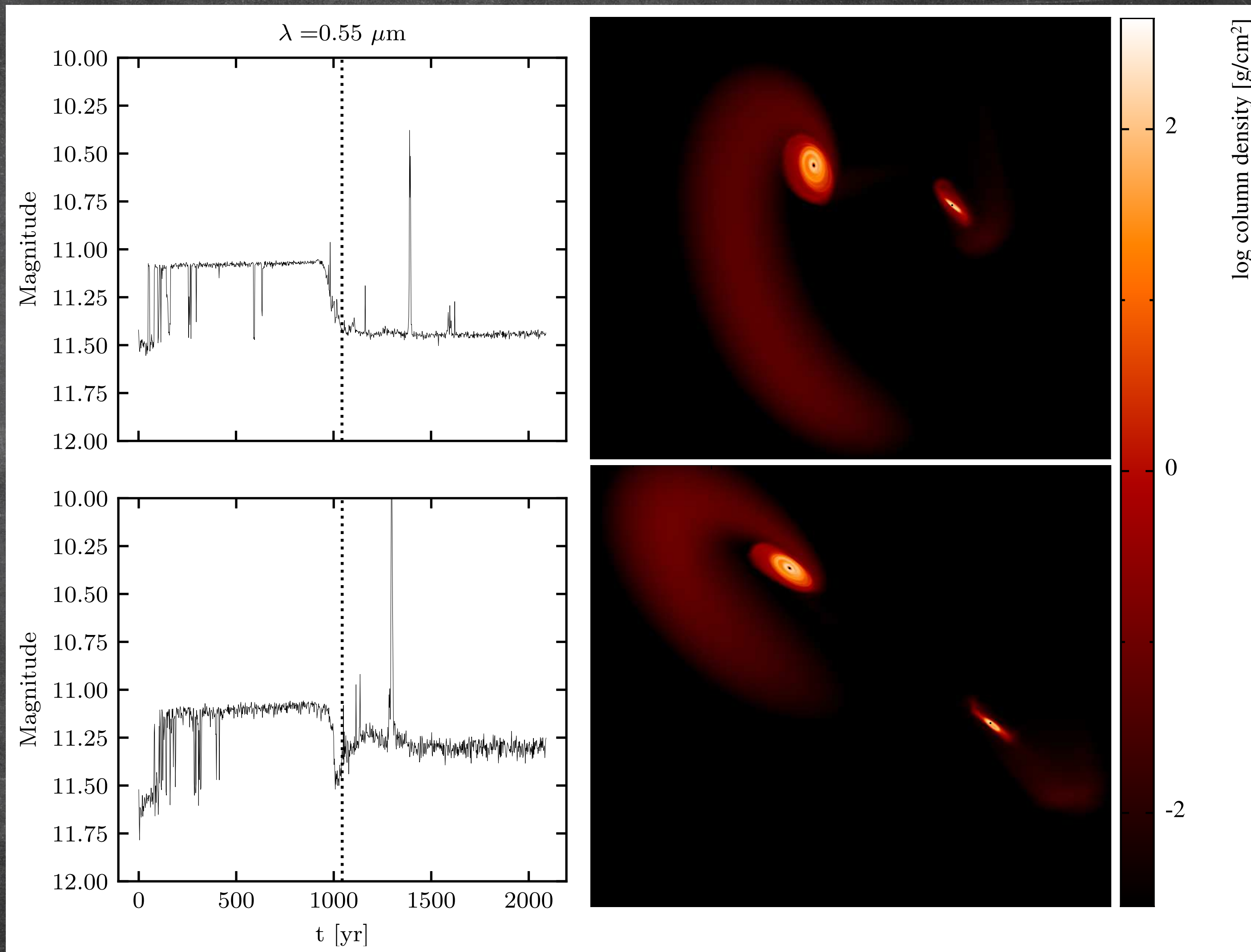
Continuum maps



V-band lightcurve



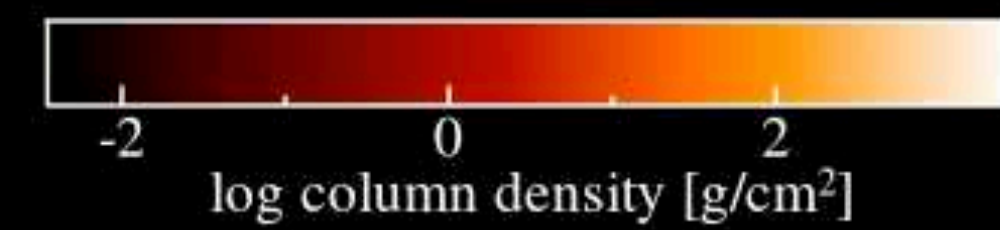
V-band lightcurve



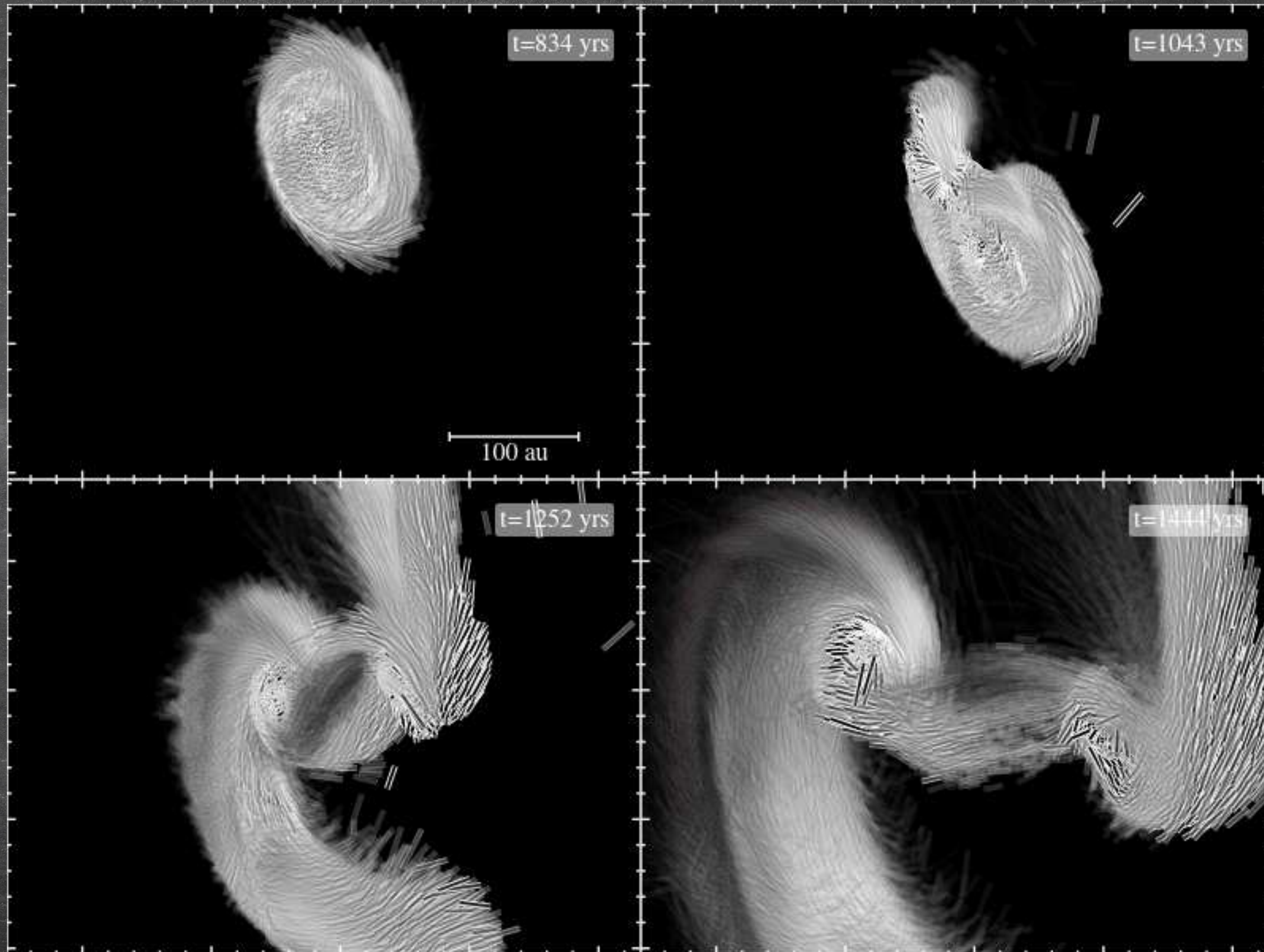
Binary simulation

t=3664 yrs

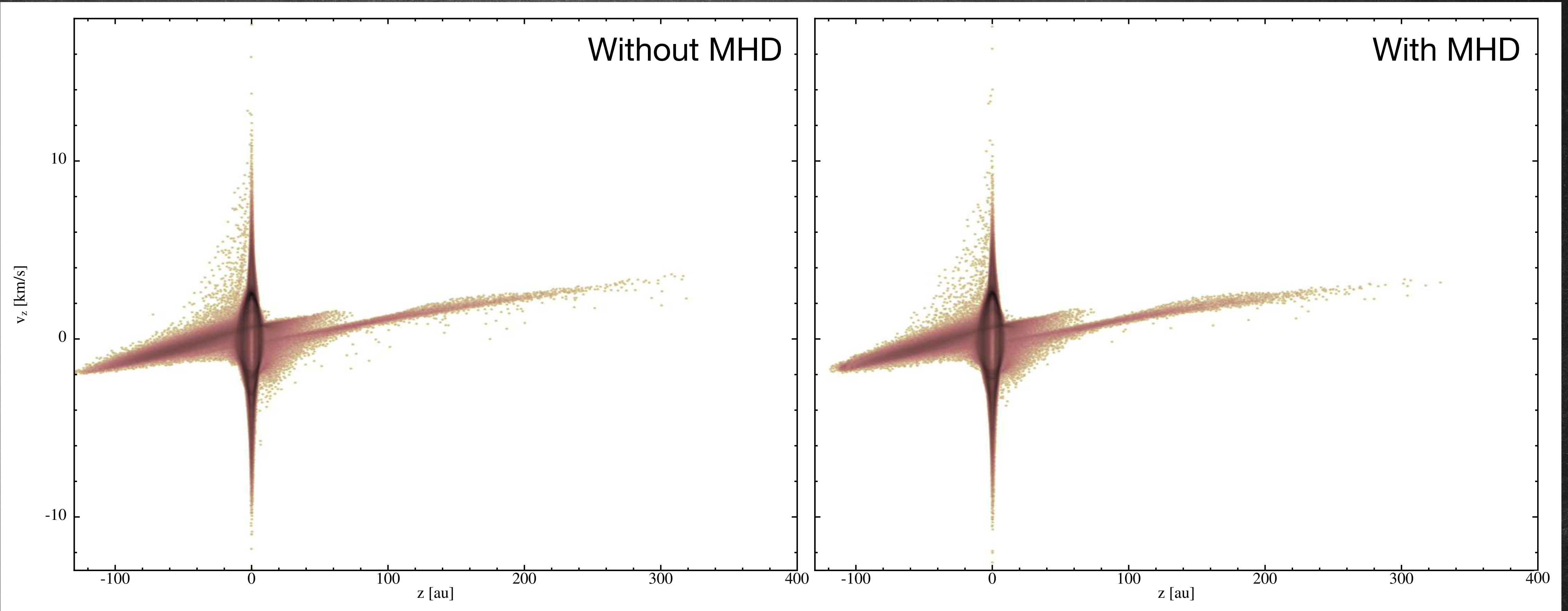
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MHD



MHD



WIP - things to explore

- Work out best-fit observation angle
- Change disc mass to match RW Aur A accretion rate and CO observations
- Adapt dust-to-gas ratio to match continuum observations
- Explore high resolution magnetic field simulations

Conclusions

- Underestimating gas mass
- Underestimating dust-to-gas ratio
- RW Aurigae did not experience high thermal processing
- Accretion burst similar to FU Ori, smaller scale
- Dimming events not observed. Wrong dust mass?
- No observed outflows yet

