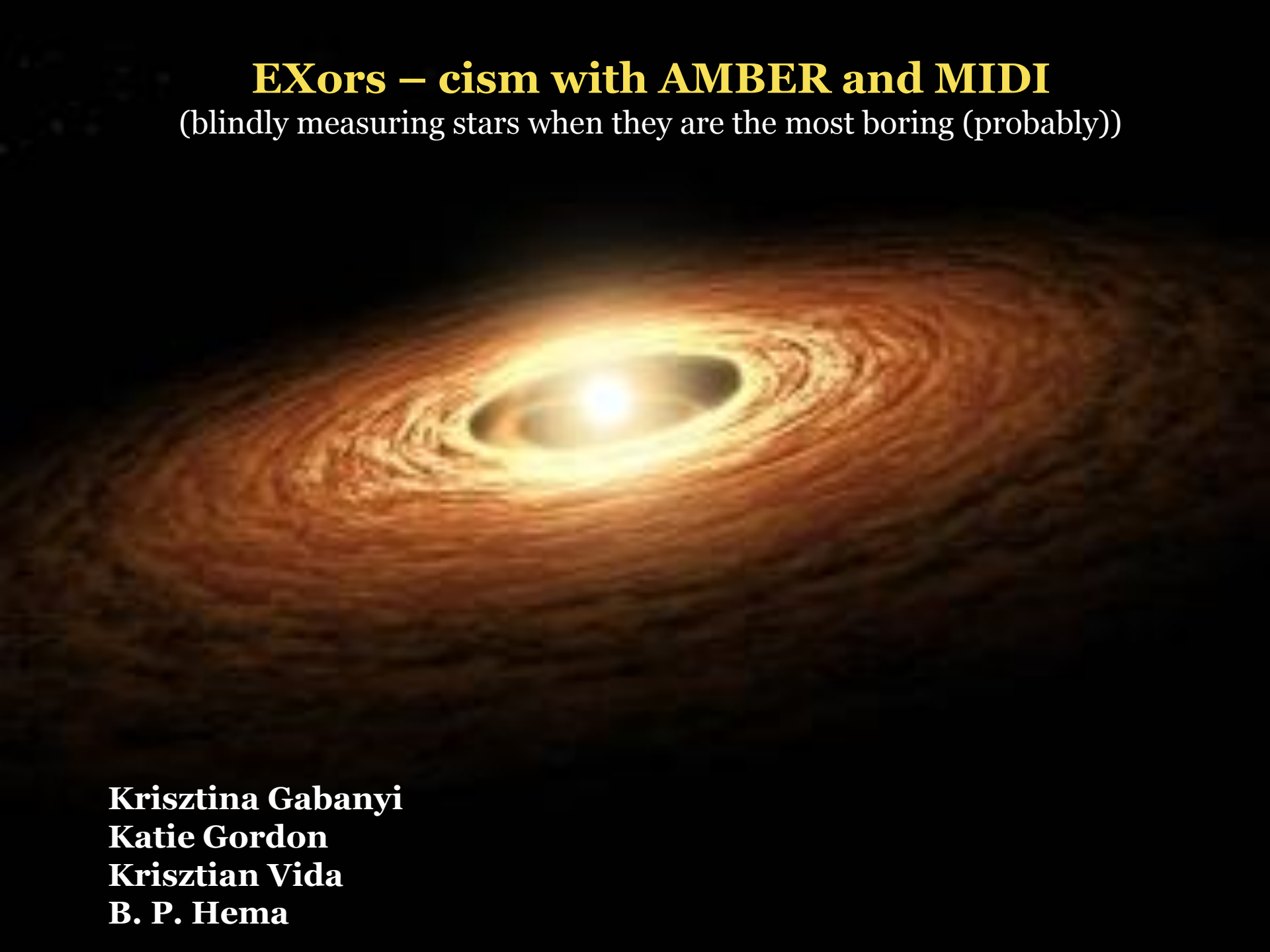
EXors – cism with AMBER and MIDI

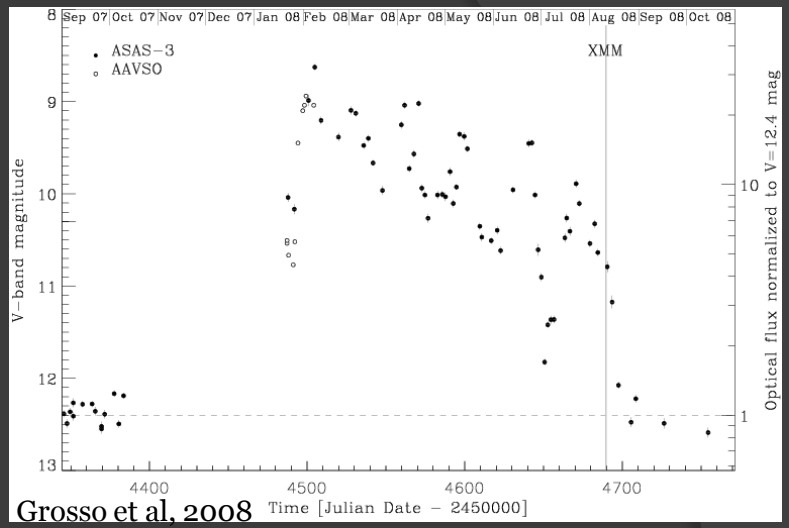
(blindly measuring stars when they are the most boring (probably))



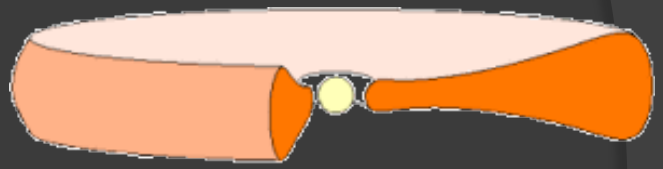
Krisztina Gabanyi
Katie Gordon
Krisztian Vida
B. P. Hema

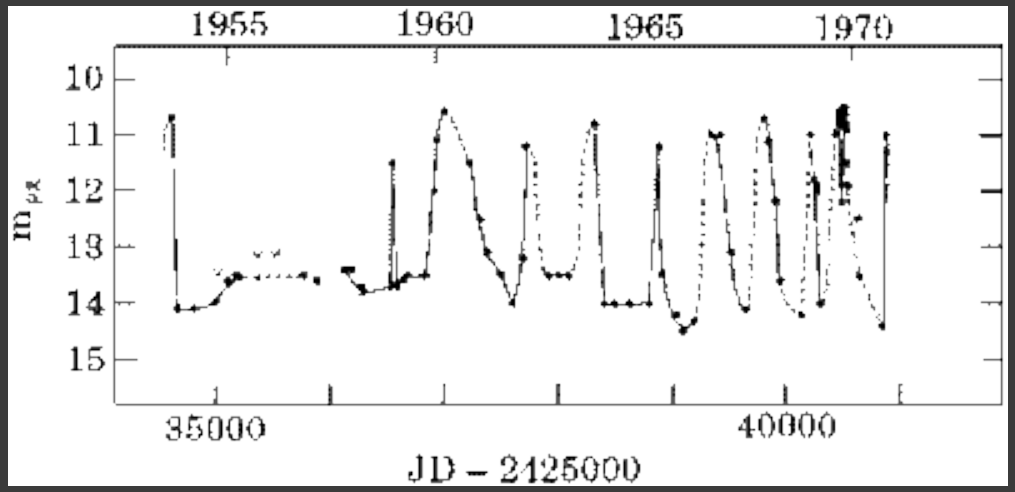
Young Stellar Objects

- Eruptive T Tauri stars
- Prototype: EX Lupi
- 1 – 4 mag outbursts over 10 – 100 days
- Outbursts separated by several months
- Eruptions attributed to enhanced accretion rate
- Bry line is good indicator of accretion rate (Lorenzetti et al., 2012)



Grosso et al, 2008





Light curve of the EXor-type star VY Tau. *(From G.H. Herbig: Eruptive phenomena in early stellar evolution, Astrophysical Journal 217, 1977, pp. 712)*

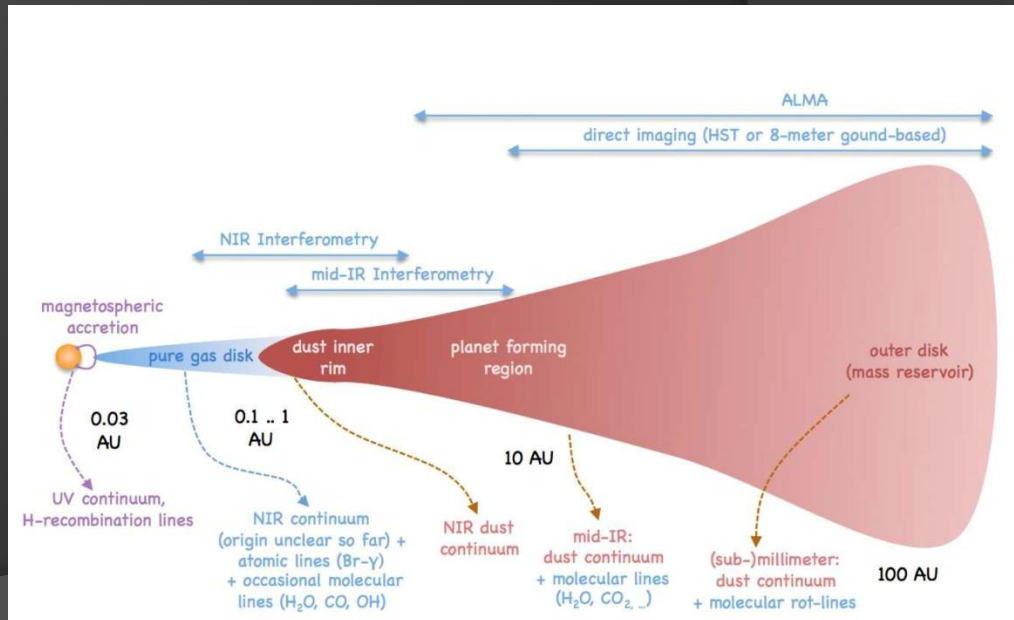
V1515 Cyg

Targets

DR Tau – K=6.9, N=3 140 pc
- archival MIDI, Brγ detection

NY Ori – K=8, N=3.3 400 pc

V2775 Ori – K=11.8, N=3
400 pc



Dullemond & Monnier, 2010

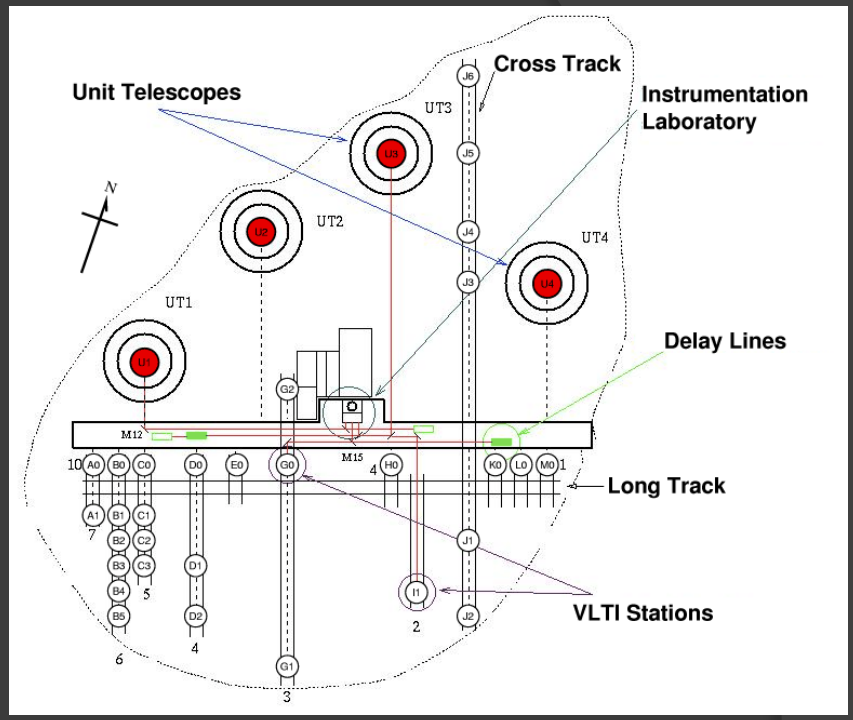
Observations

Zero Epoch observations

DR Tau – AMBER and MIDI (1+1)

NY Ori – AMBER (?) and MIDI (1+2)

V2775 Ori – MIDI (2)



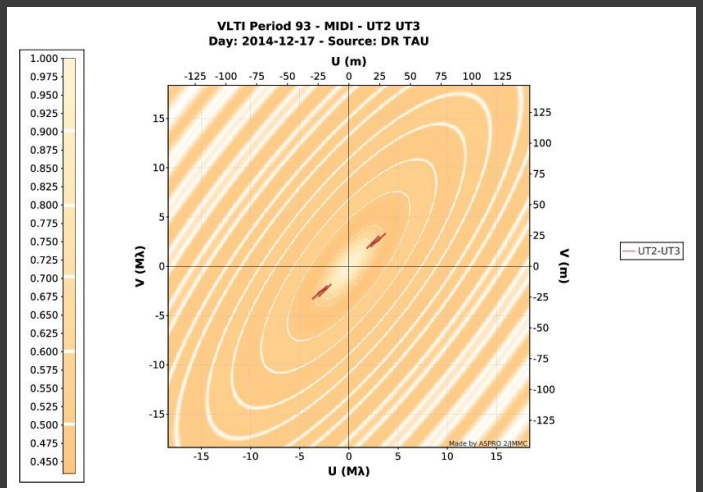
MIDI – UT2-UT3 46 m baseline (DR Tau)
UT2-UT3 and UT2-UT4 89m baseline (NY Ori, V2775 Ori)
AMBER – UT1-UT3-UT4 (DR Tau)
UT1-UT2-UT3 (NY Ori) – fainter star

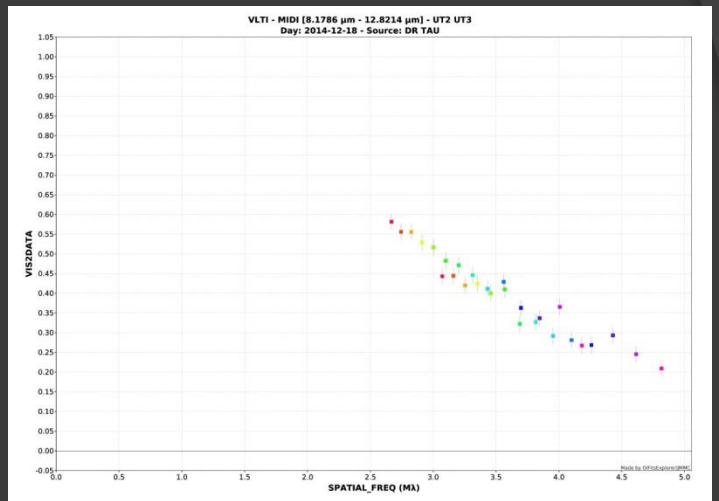
Ask for ToO when outbursting

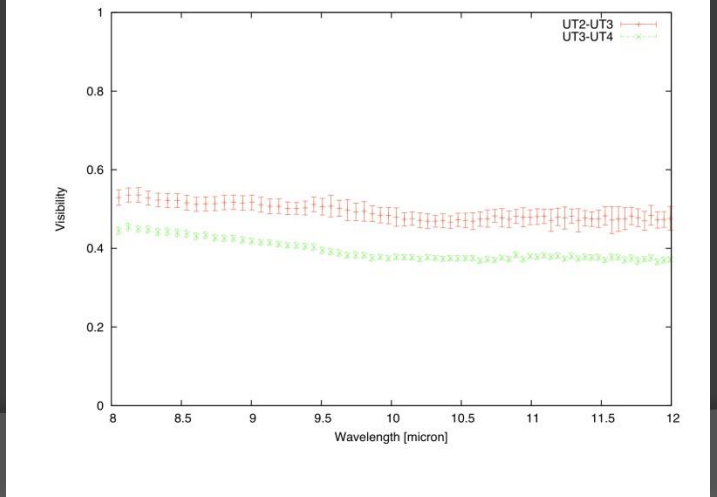
EX-pectations

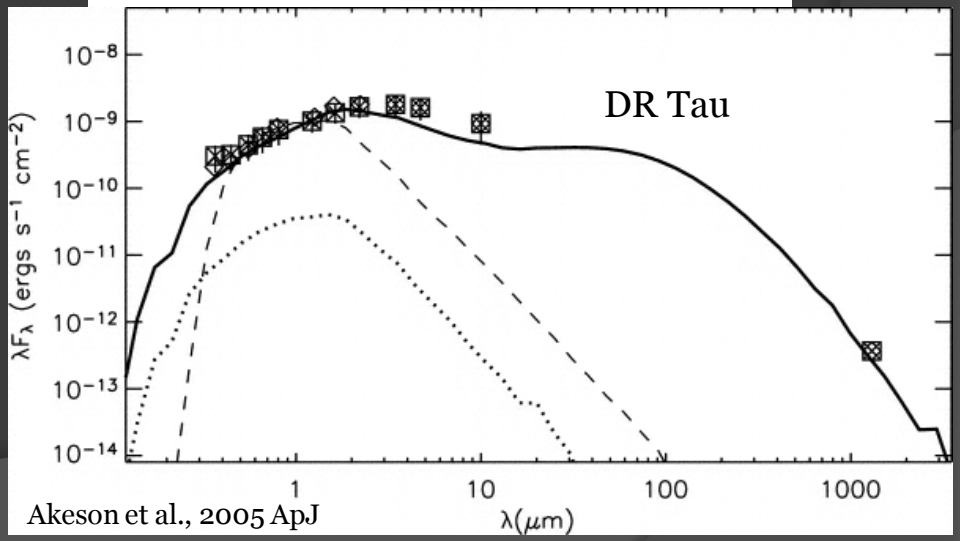
Brγ line measurement from AMBER will give accretion rate for DR Tau

Inner and outer disk size measurements for all stars with AMBER and MIDI









Akeson et al., 2005 ApJ

References

http://kisag.konkoly.hu/Science/eruptive_intro.html

http://inspirehep.net/record/861675?ln=en

Akeson et al., 2005 ApJ
Dullemond & Monnier, 2010
Grosso et al., 2008
Herbig, G., 1977 ApJ