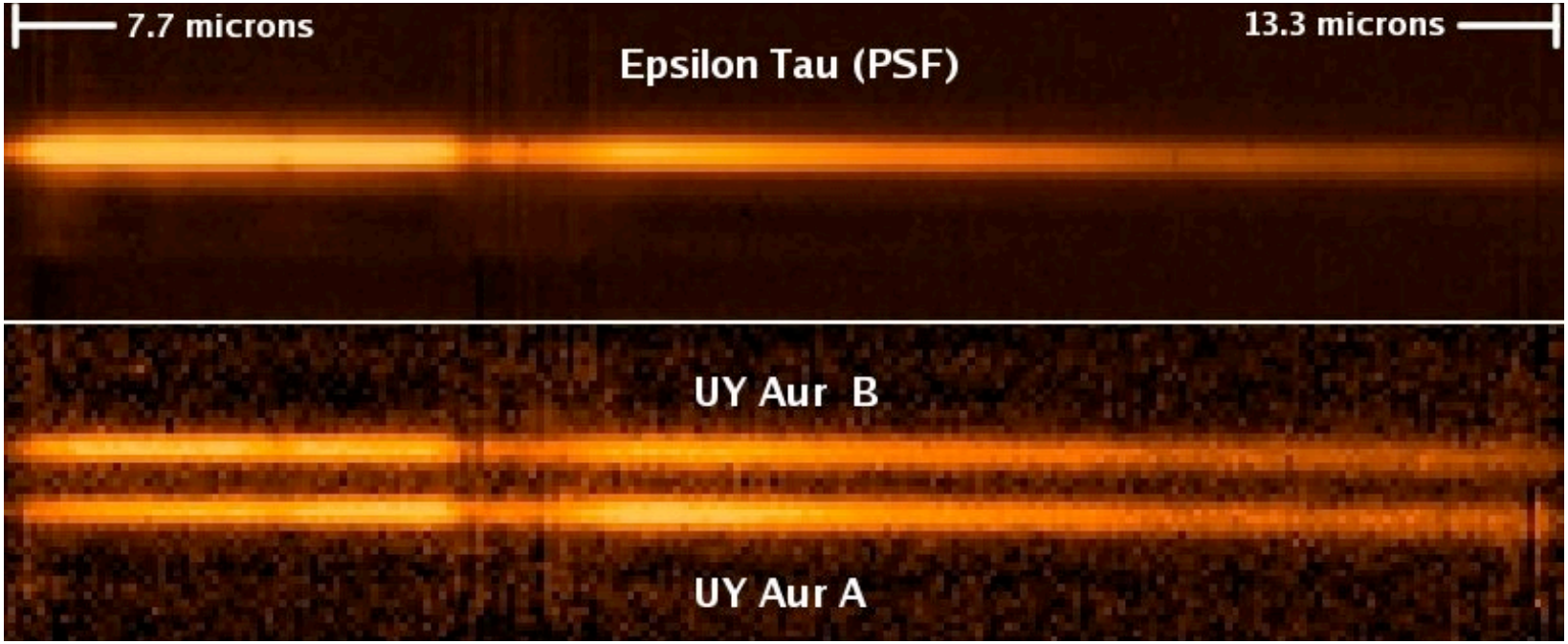
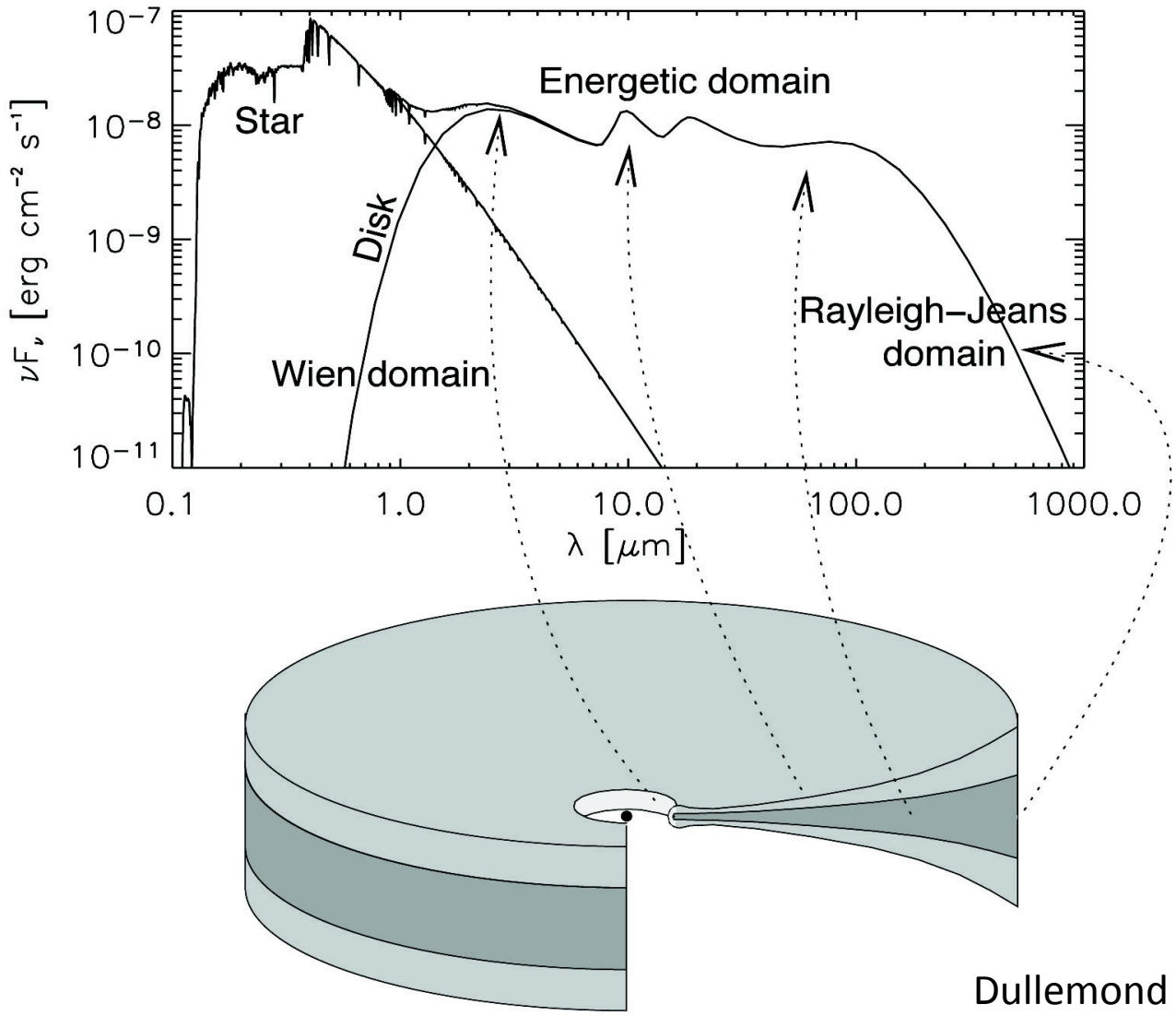
Spatially Resolved Mid-IR Spectra of Binaries with Adaptive Optics



Andy Skemer, Laird Close, Phil Hinz, Bill Hoffmann, Tom Greene, Tracy Beck, Jared Males

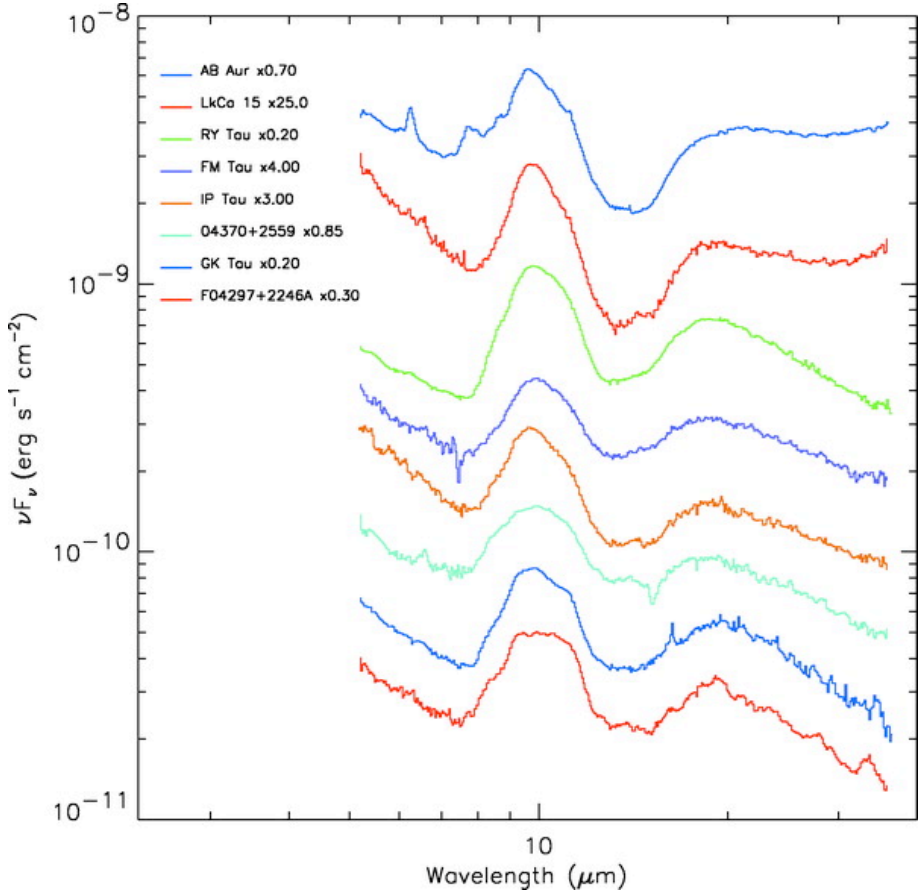
Circumstellar Disks



Dullemond et al, PPV.

The 10 μm Silicate Feature: An Evolutionary Trend?

Group A



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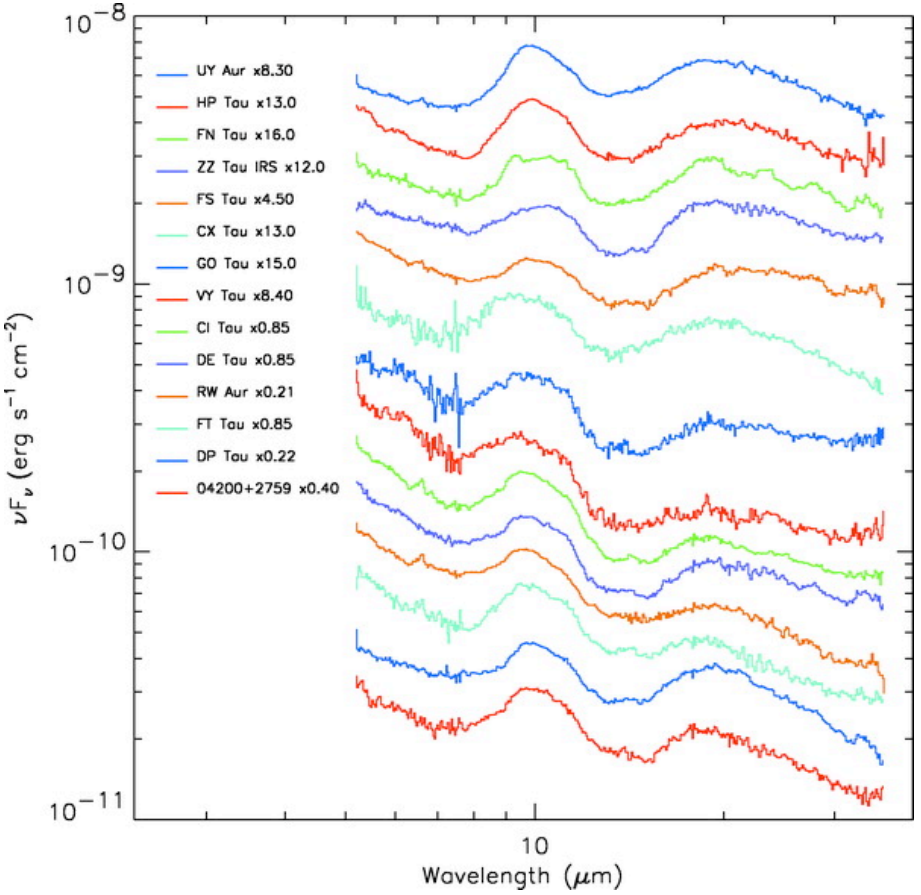
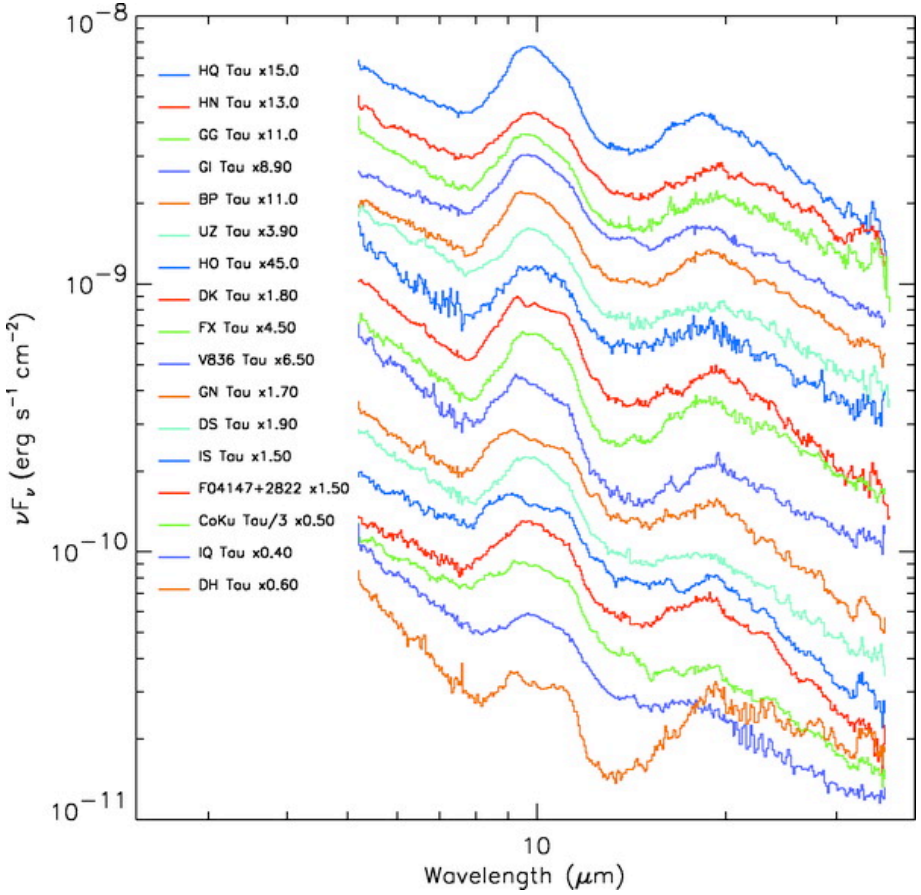


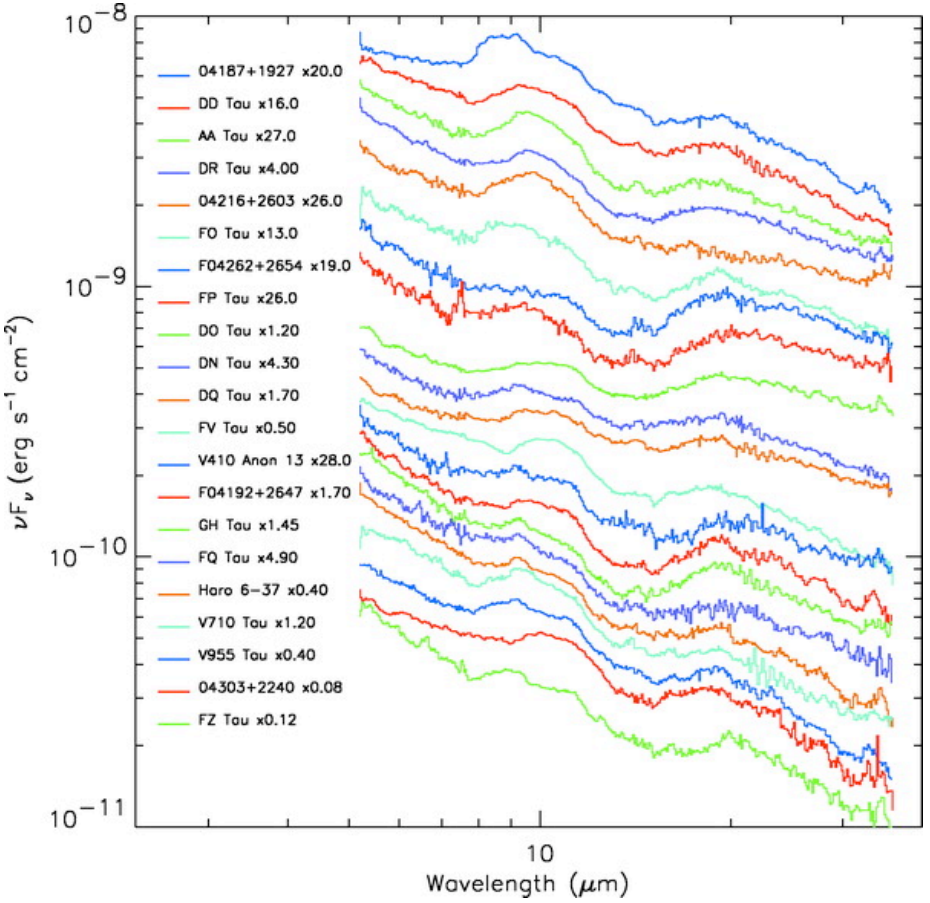
Furlan et al, ApJS, 2006

The 10 μm Silicate Feature: An Evolutionary Trend?

Group C



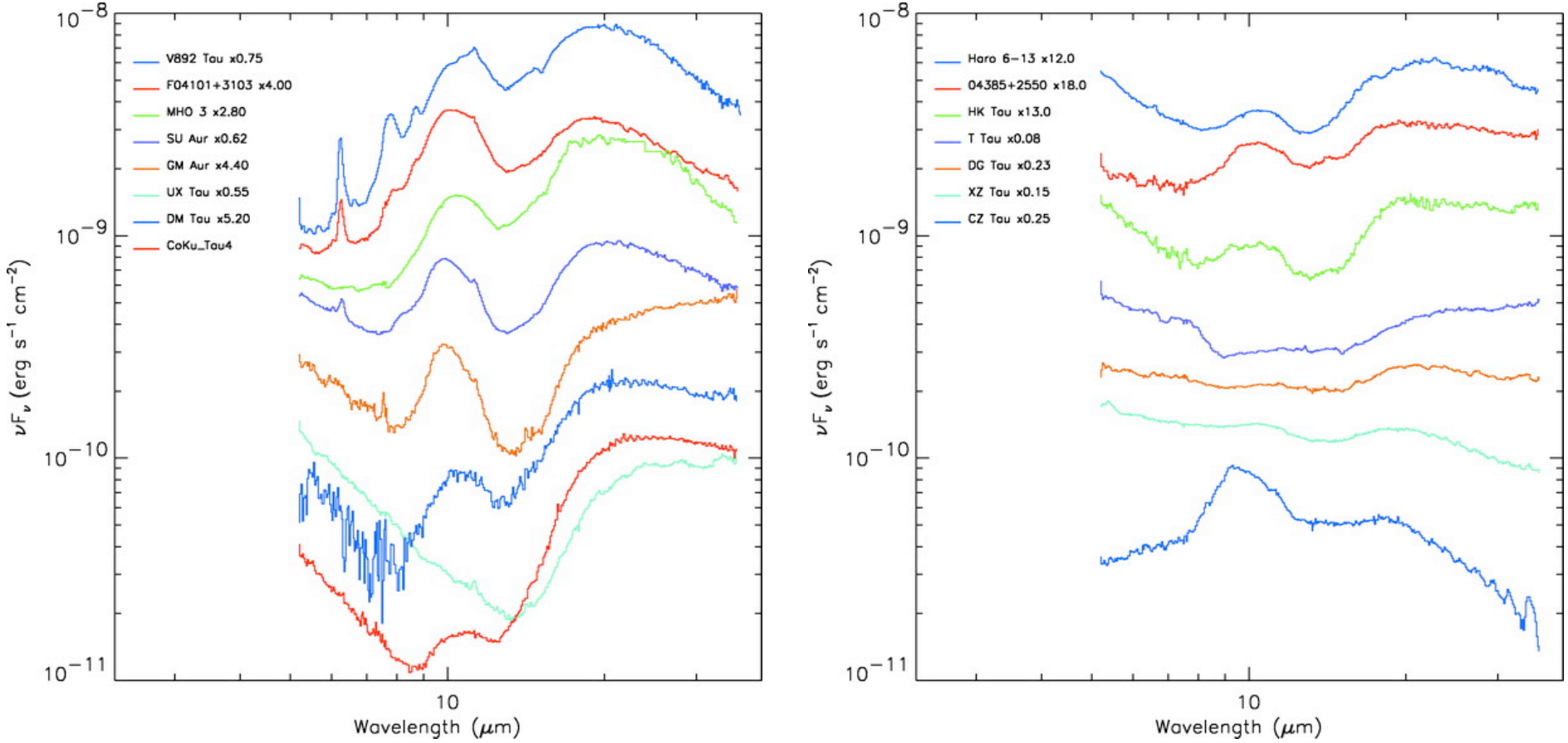
Group D



Furlan et al, ApJS, 2006

The 10 μm Silicate Feature: An Evolutionary Trend?

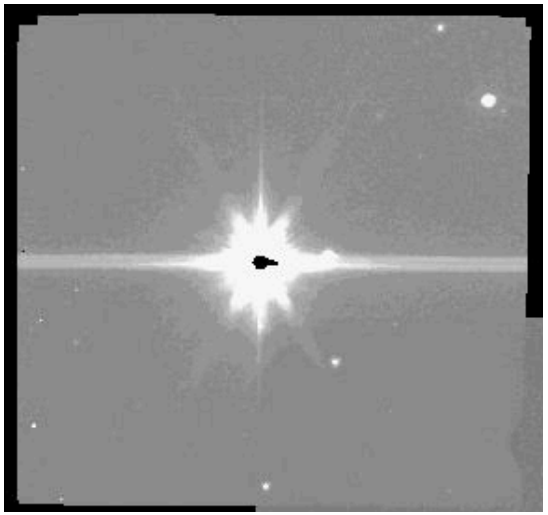
Outliers



Furlan et al, ApJS, 2006

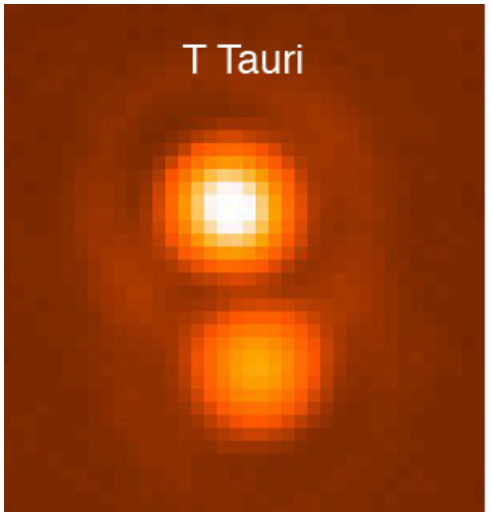
Binaries at 10 μm

~5’



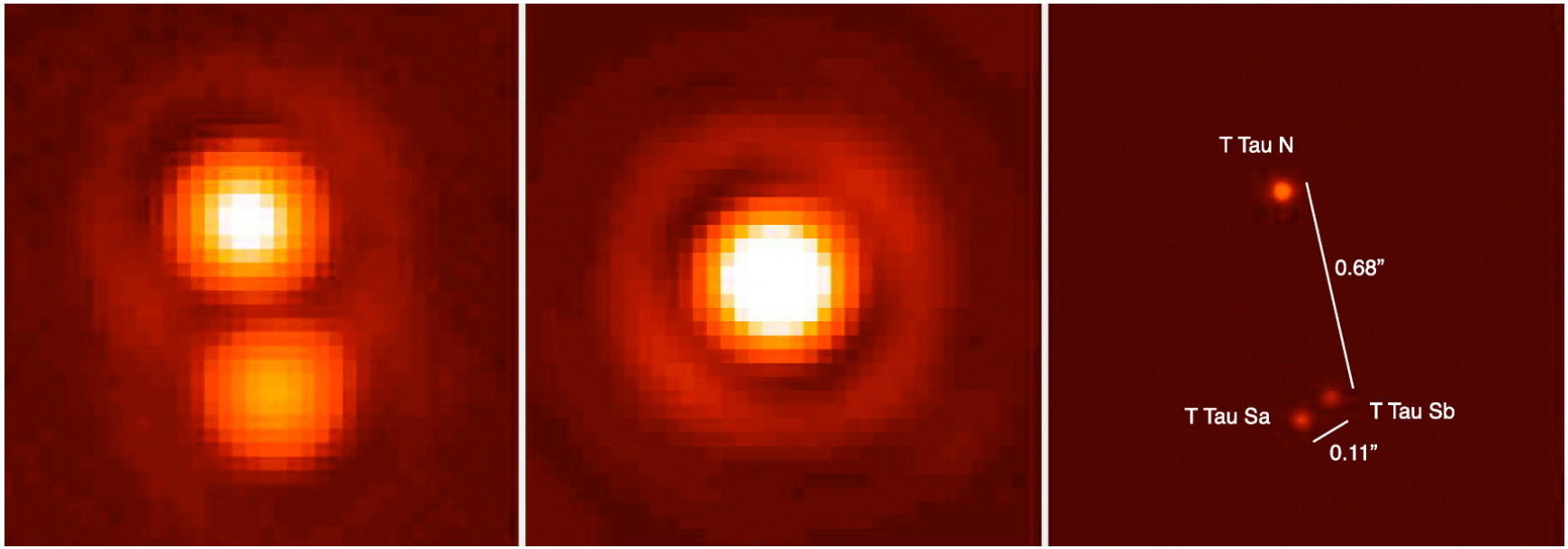
8 um Spitzer image of T Tau

~1.5”



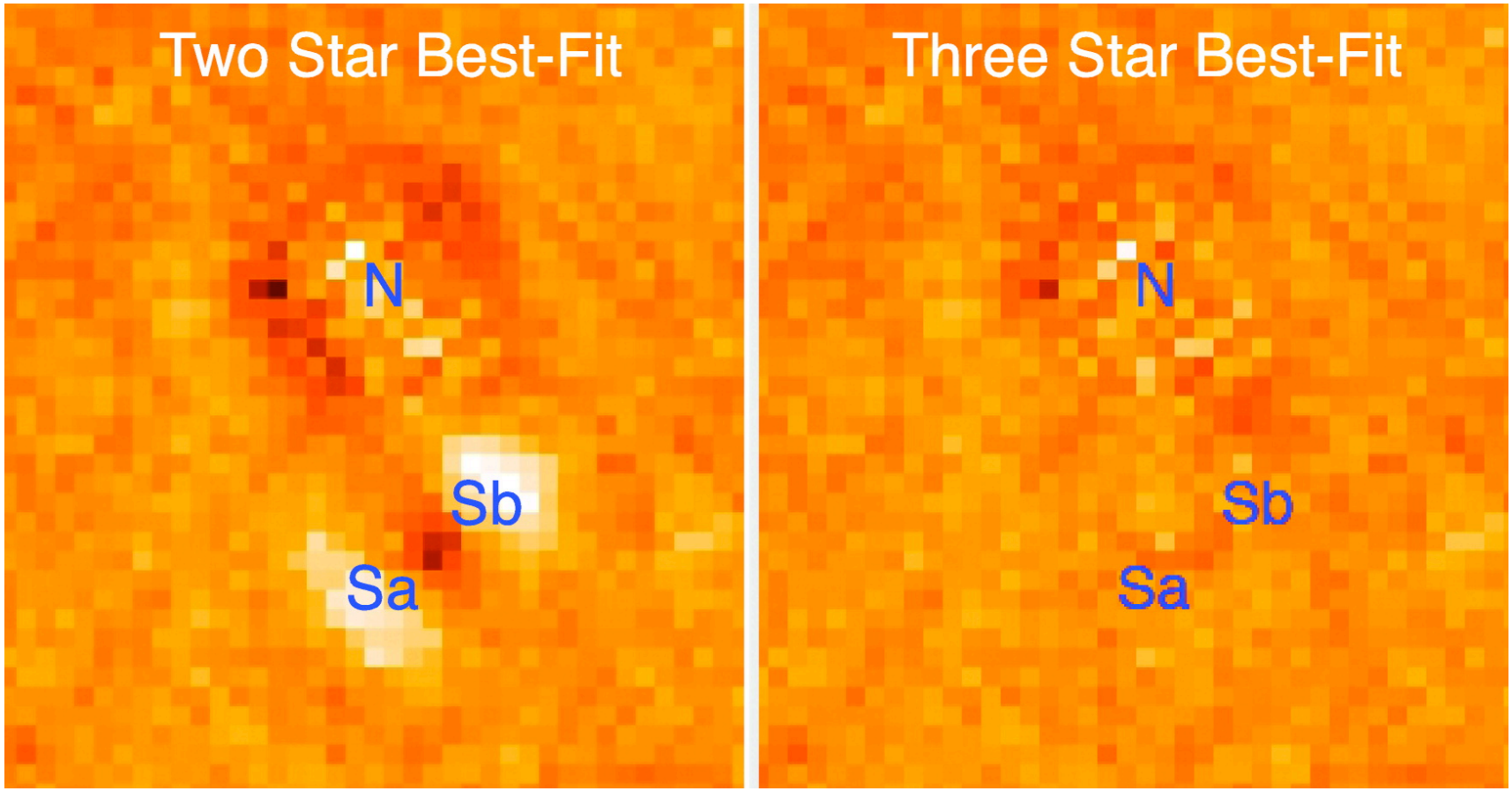
10.55 um MMTAO image of T Tau

Adaptive Optics Imaging of T Tau



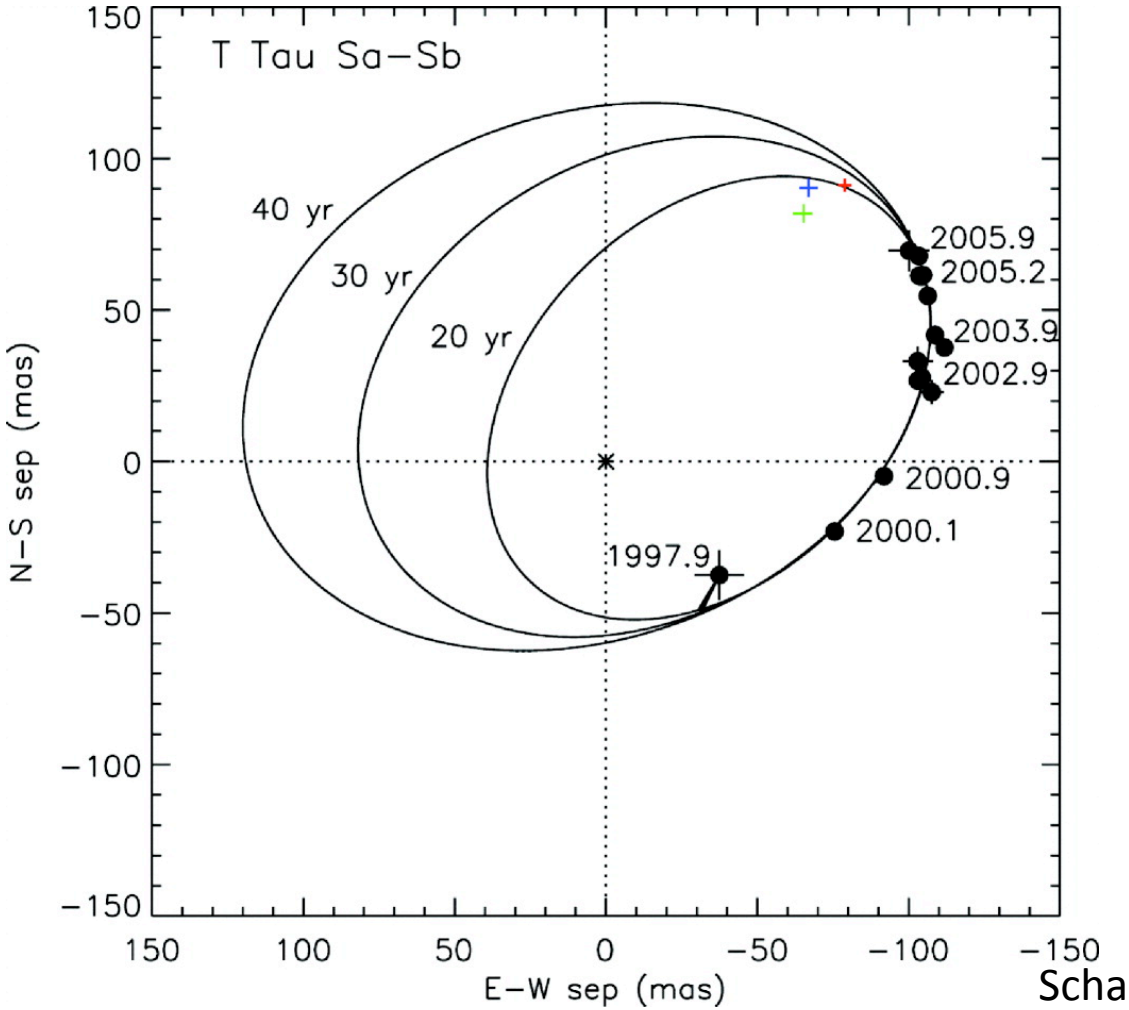
Skemer et al. (ApJ, 2008)

Adaptive Optics Imaging of T Tau



Skemer et al. (ApJ, 2008)

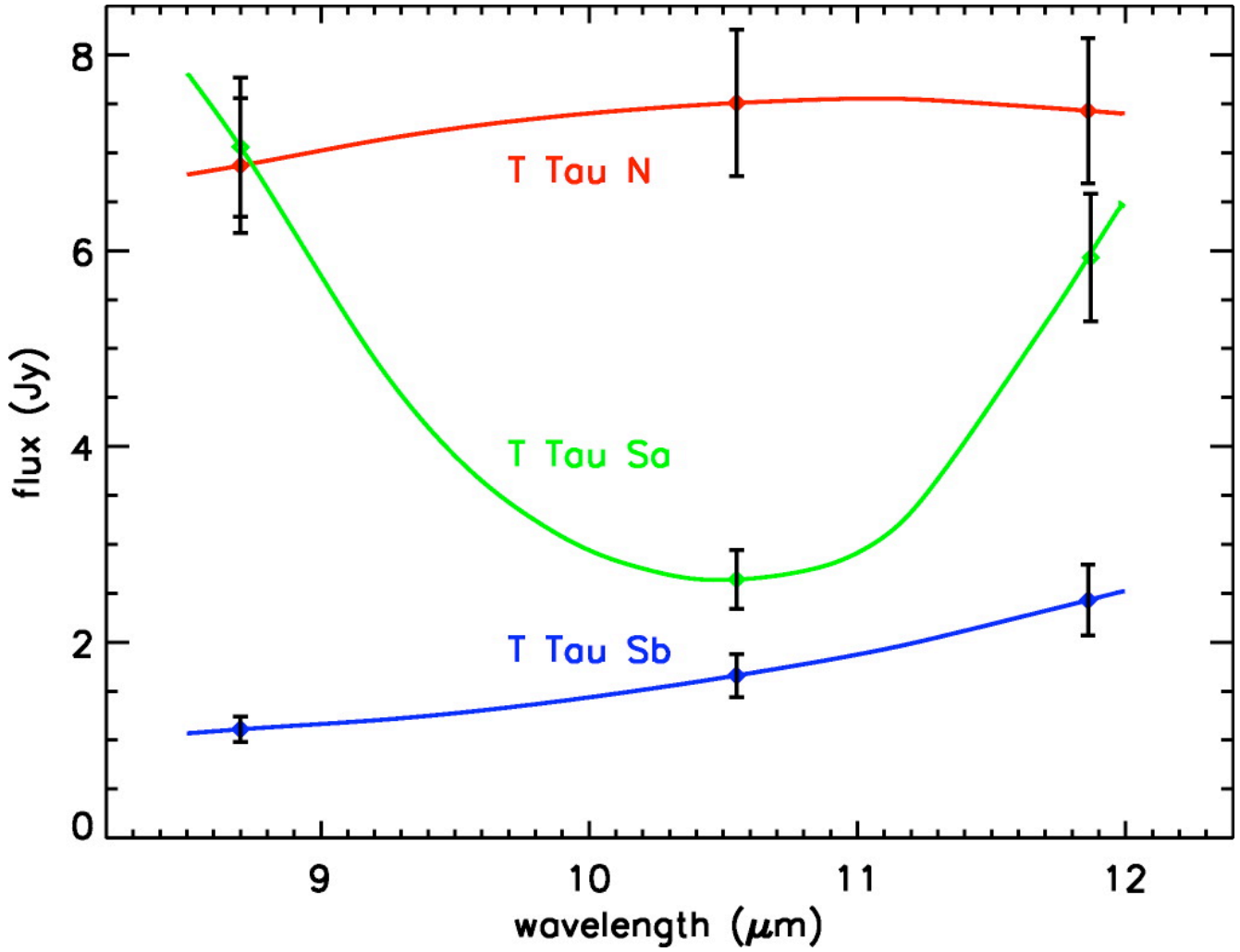
Adaptive Optics Imaging of T Tau



Schaefer et al. (2006)

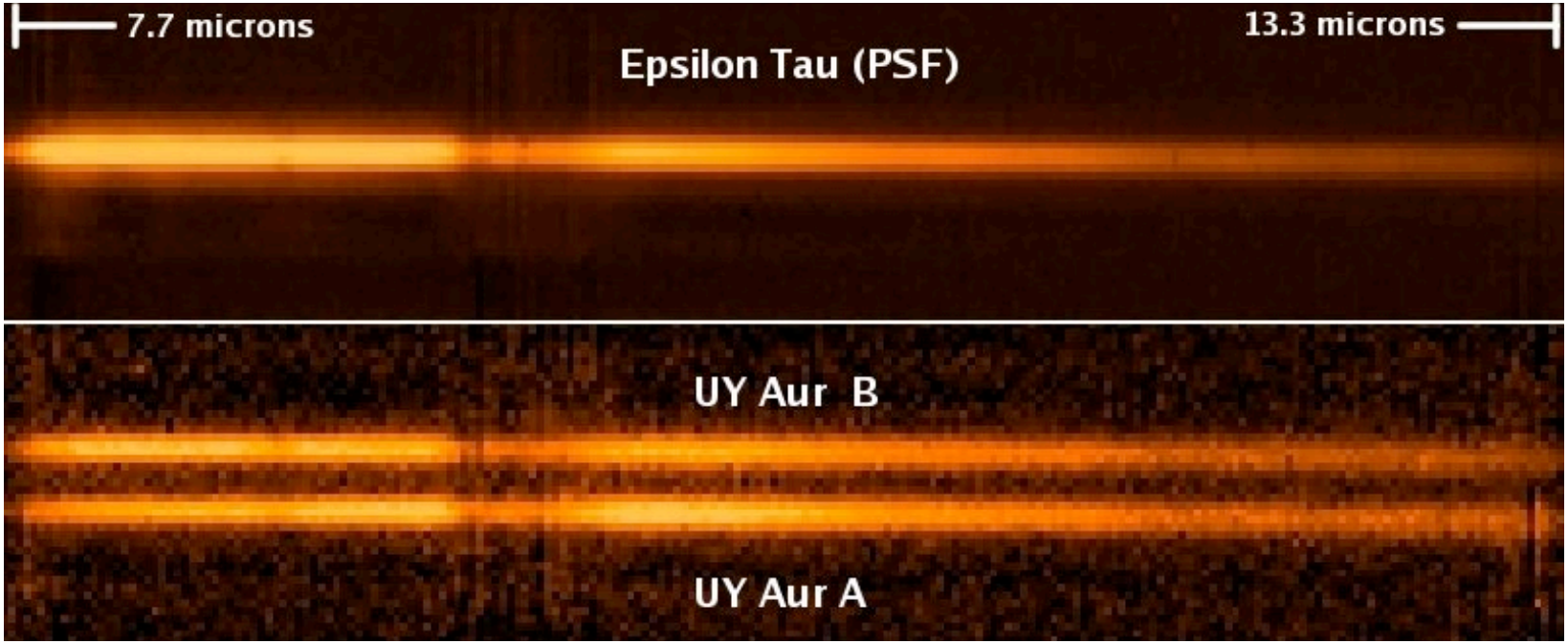
Skemer et al. (ApJ, 2008)

Adaptive Optics Imaging of T Tau



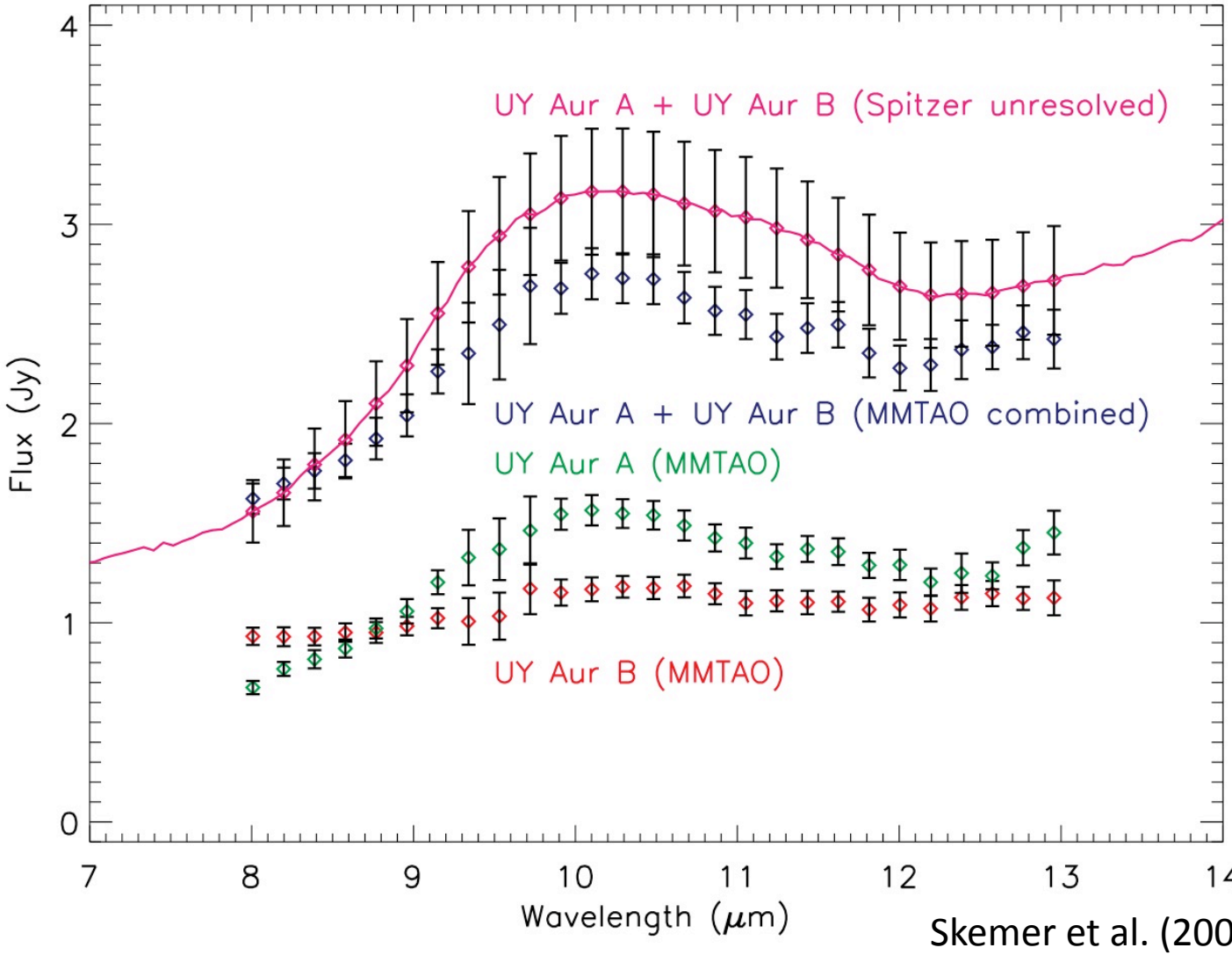
Skemer et al. (ApJ, 2008)

Adaptive Optics Spectra of UY Aur



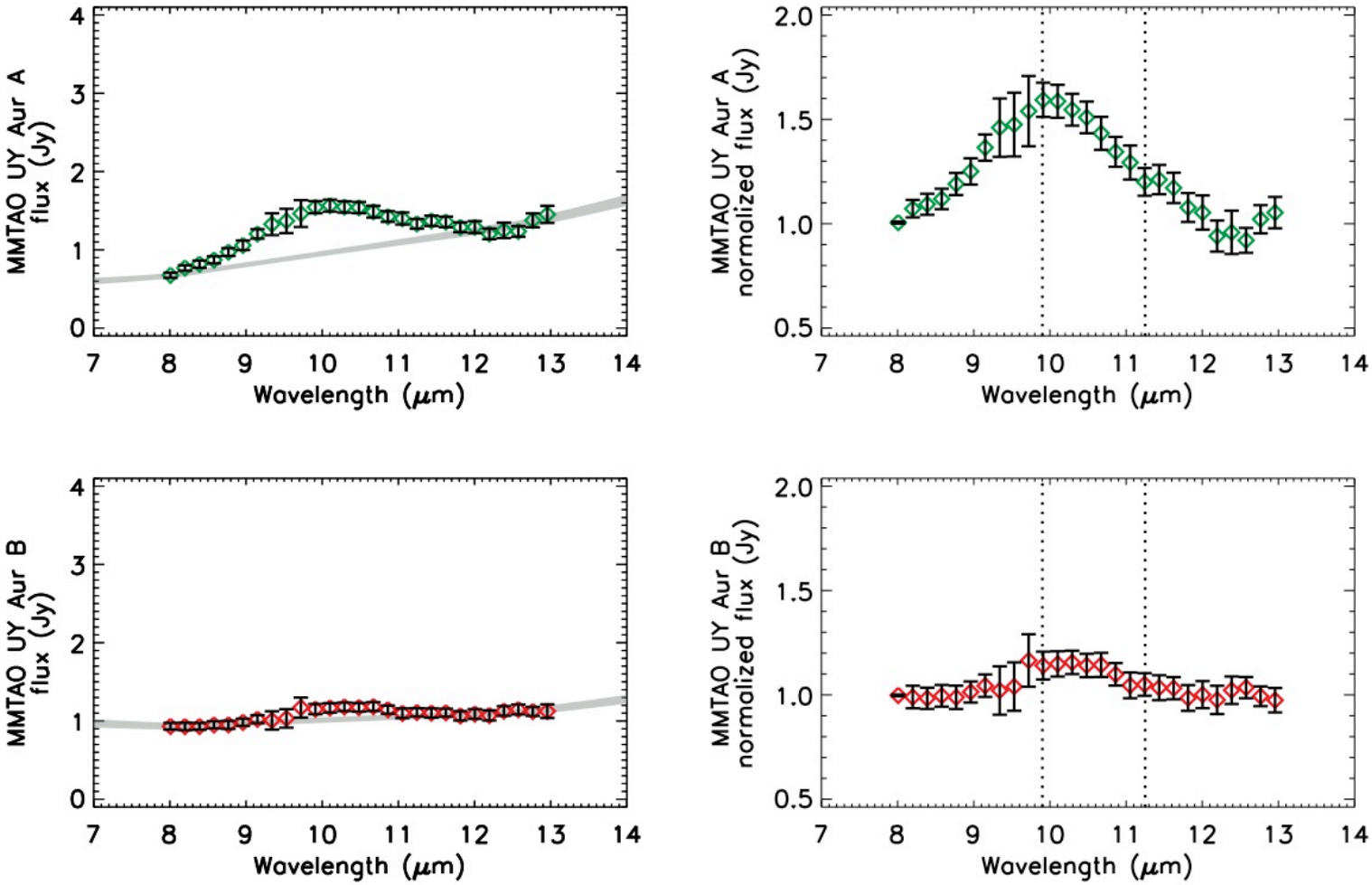
Skemer et al. (2009)

Adaptive Optics Spectra of UY Aur



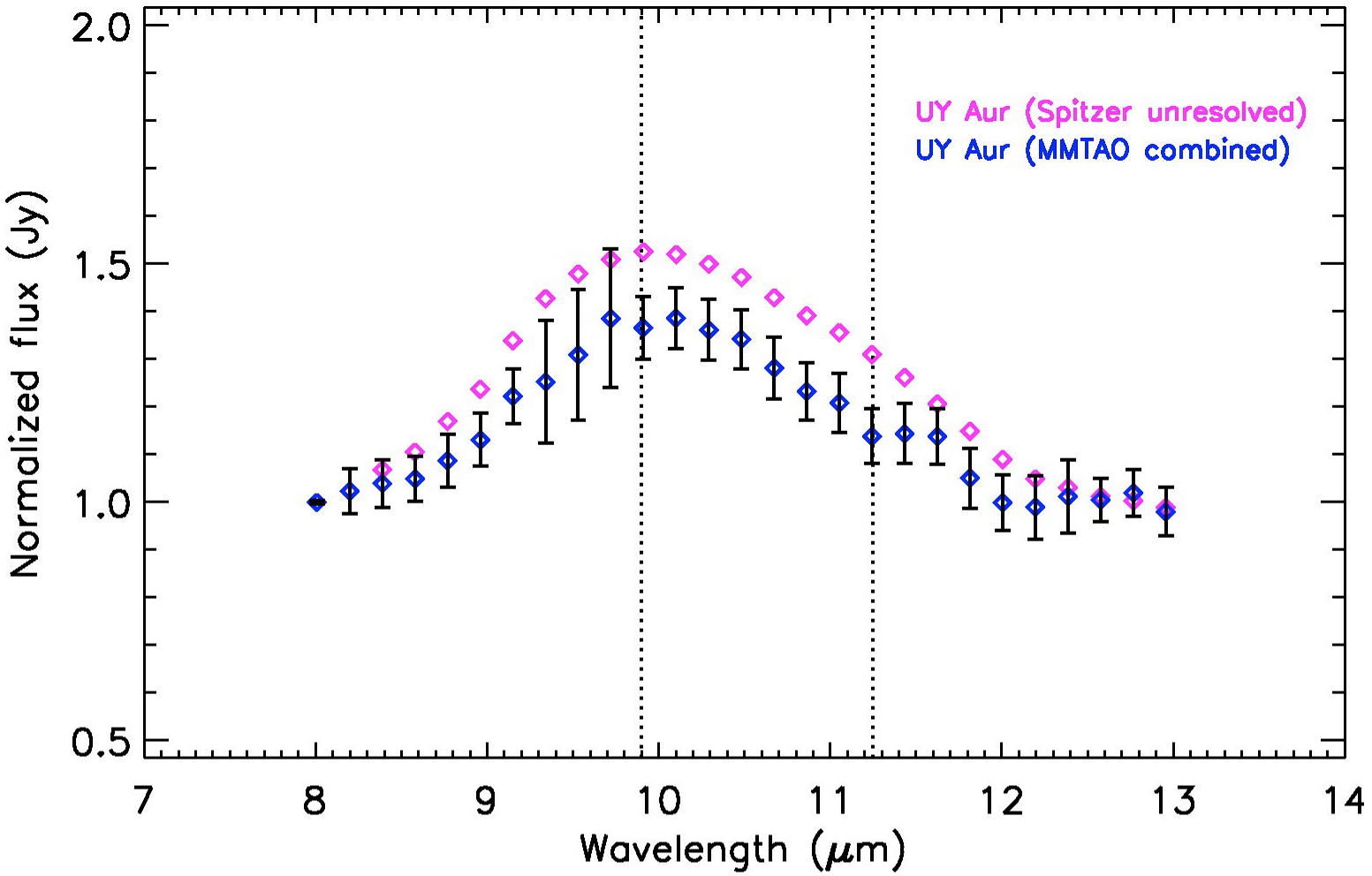
Skemer et al. (2009)

Adaptive Optics Spectra of UY Aur



Skemer et al. (2009)

Adaptive Optics Spectra of UY Aur



Skemer et al. (2009)

Next Steps

- Complete our survey of resolved 10-micron binaries (12-16 binaries)
- Determine how the 10-micron silicate feature varies between binary components and investigate what parameters might be important for grain-growth/planet formation
- Study variability of silicate features

Other MIRAC/AO results

- (409.19) A Direct Measurement of Atmospheric Dispersion in N-band AO Spectra: Implications for Mid-IR Systems on ELTs

- (428.09) Diffraction Limited Narrowband Mid-IR Imaging of the Carbon Rich Star IRC +10216 at the MMT