



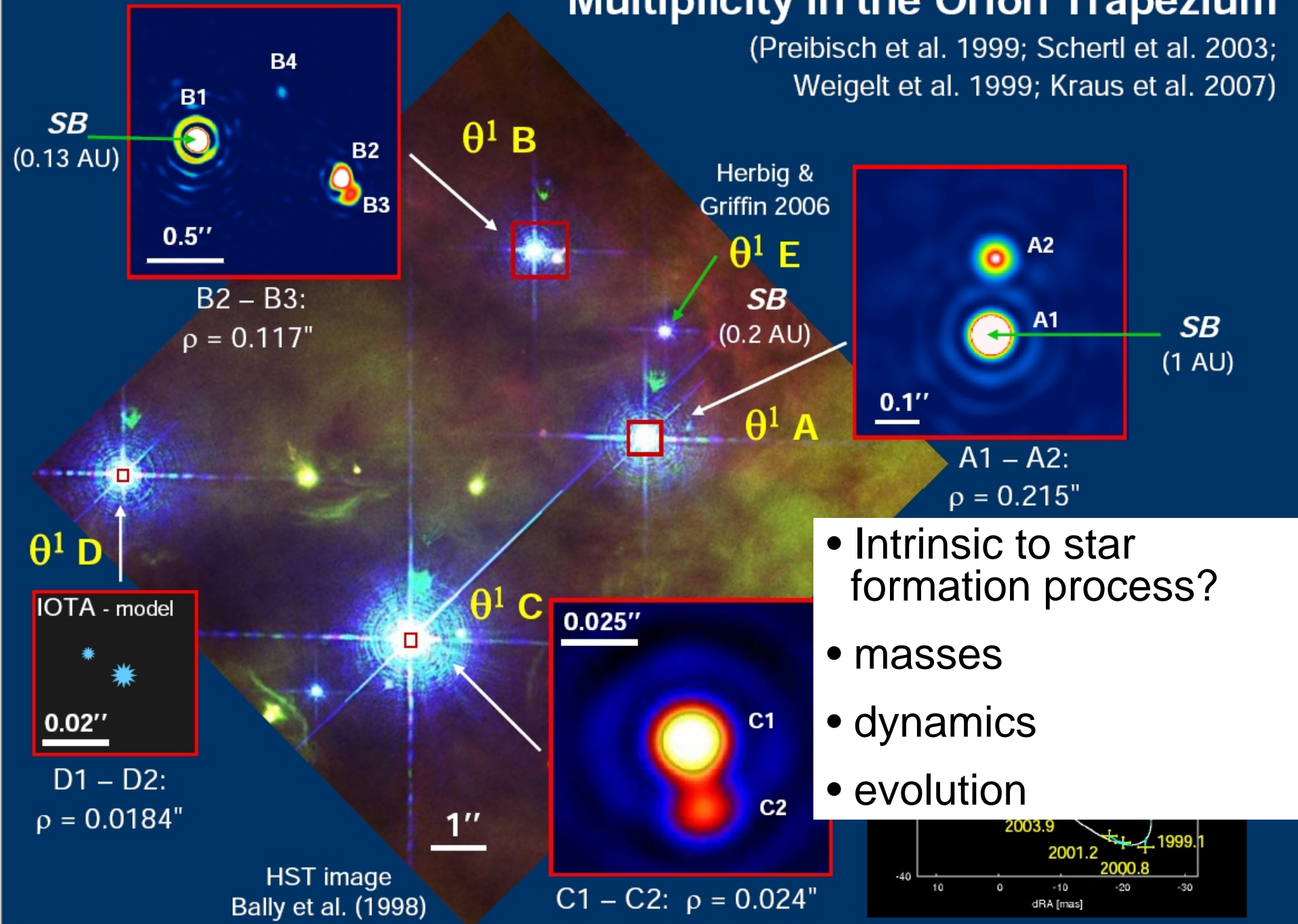
Observing Massive Binaries with the CHARA Array

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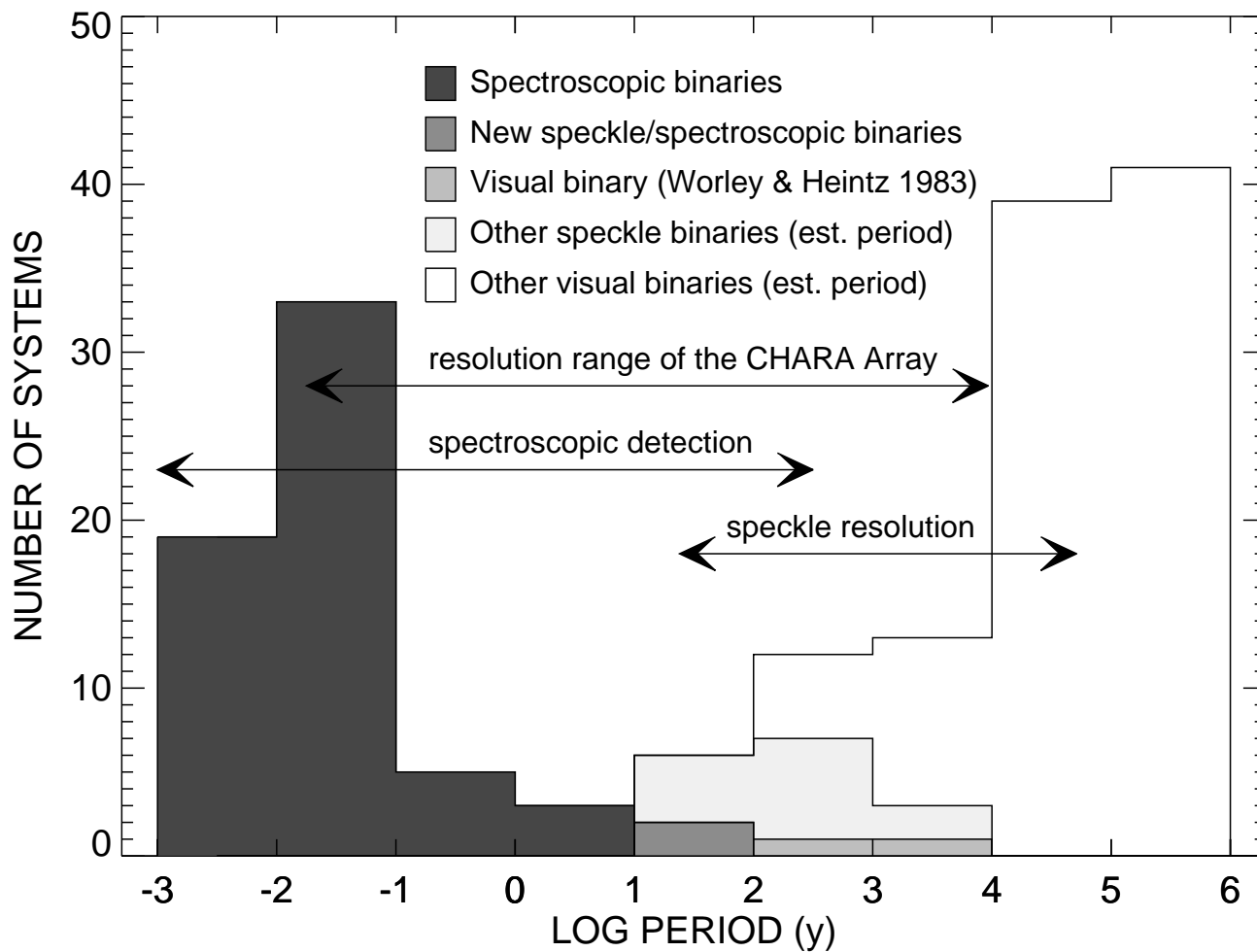
Multiplicity in the Orion Trapezium

(Preibisch et al. 1999; Schertl et al. 2003; Weigelt et al. 1999; Kraus et al. 2007)



- Intrinsic to star formation process?
- masses
- dynamics
- evolution

Mason et al. (1998, 2009)





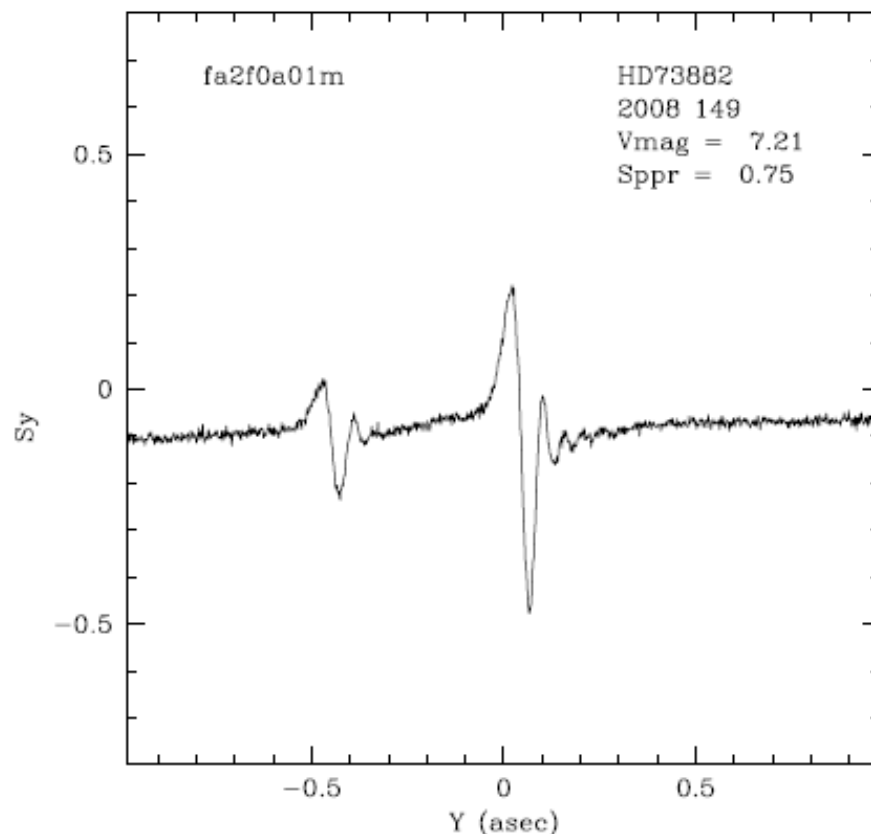
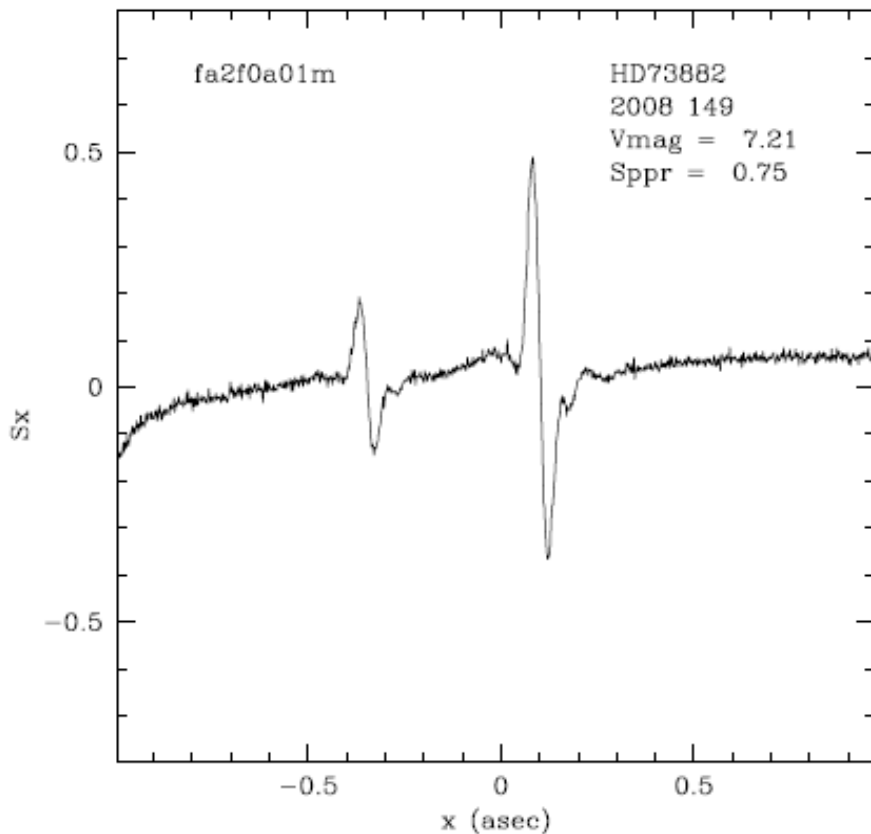
Missing Period Range

- CHARA Survey (Turner)
- HST/Fine Guidance Sensor (FGS) Program (~300 O-stars; Cyg OB2, NGC 3603)



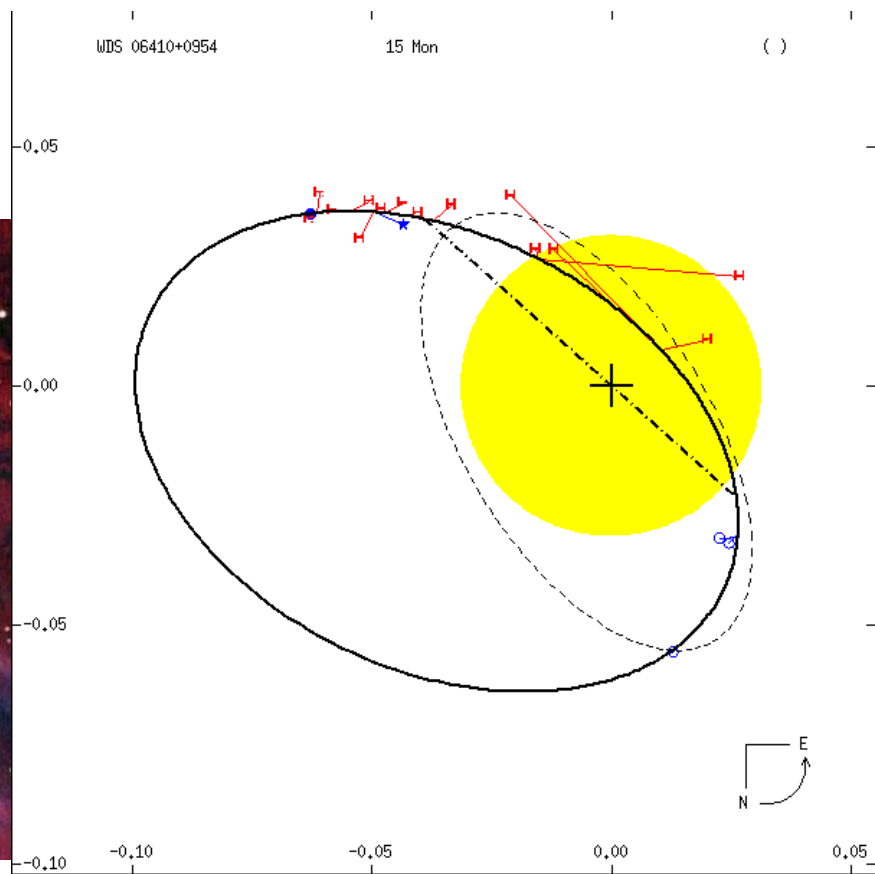


FGS TRANS mode Scans



Multiples Among Massive Stars: FGS/Speckle Program on 15 Mon

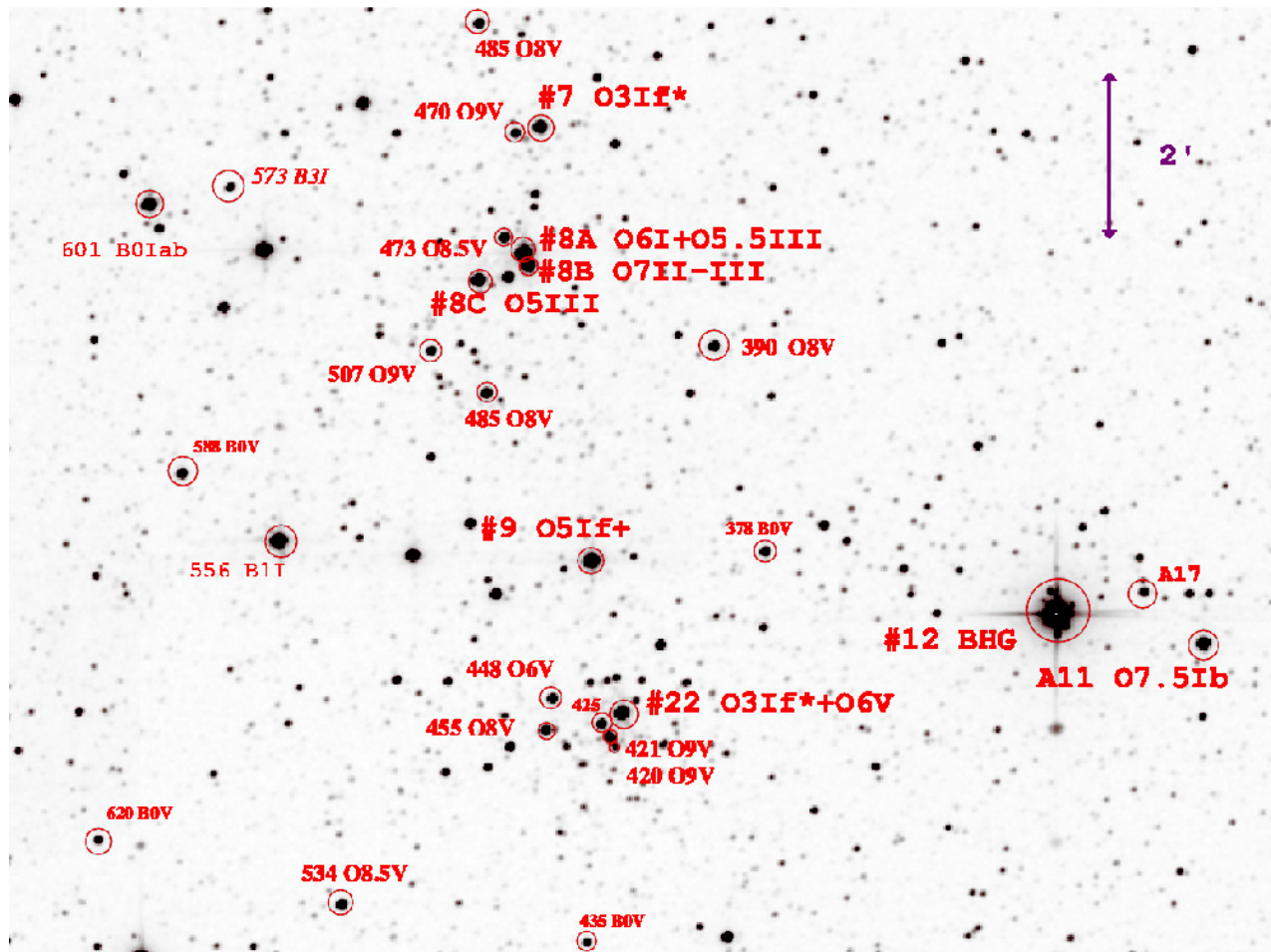
- O7 Ve
- Original orbit (Gies et al. 1997) needs revision
- Possible triple



Multiples Among Massive Stars: Cyg OB2 #12

- MIRC:
Cyg OB2#12,
massive B-
hypergiant
(triple?)

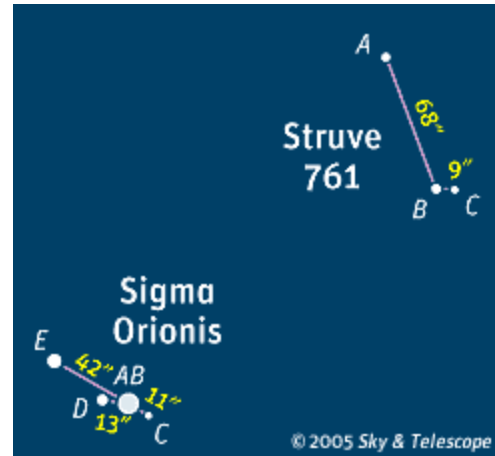
Negueruela
et al. (2008)



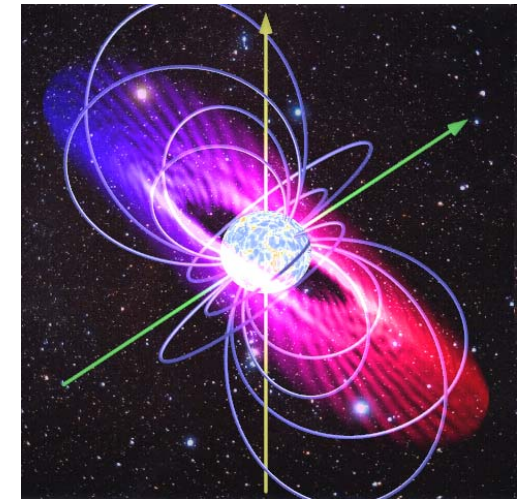


Multiples Among Massive Stars: Sigma Ori AB

- A-B 0.25 arcsec, 170 year period
- A spectroscopic companion found to A (143 d) with very high eccentricity
- Kozai mechanism?
- Need CHARA MIRC and/or PAVO

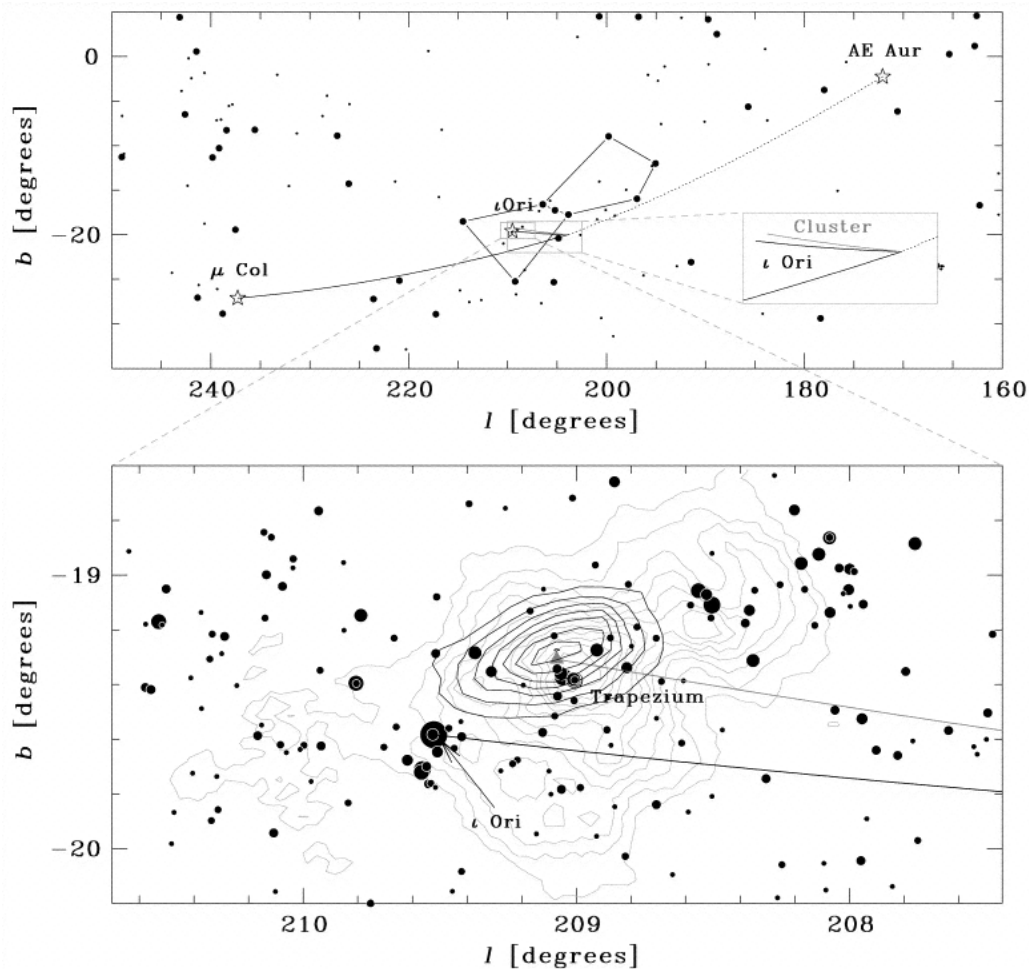


Sigma Ori E is a magnetic star with co-rotating clouds, a key target for VEGA (image: R. Townsend)



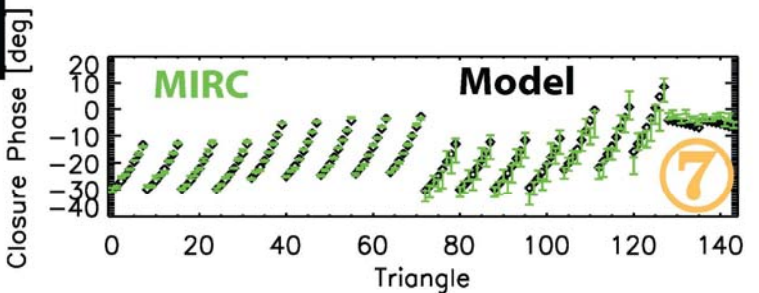
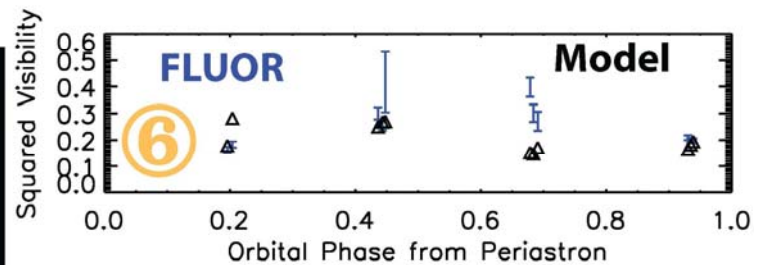
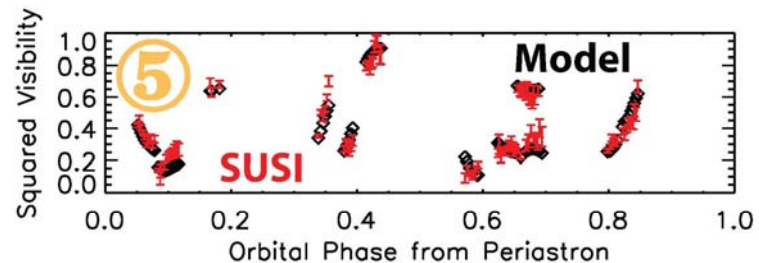
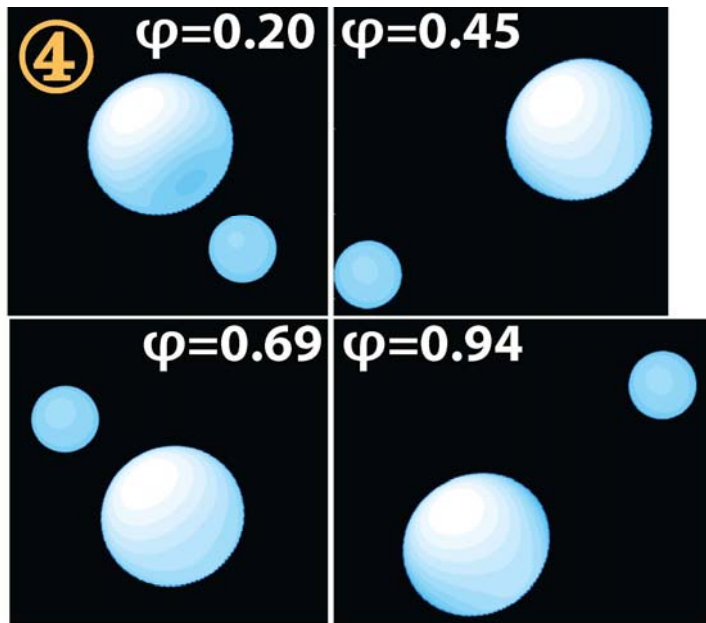
Binaries & Runaway Stars: Iota Ori (Boyajian, O'Brien)

- Formed 2 Myr ago in binary – binary encounter
- New spectroscopic and astrometric orbit
- SB2, P=29 d
- Classic and MIRC



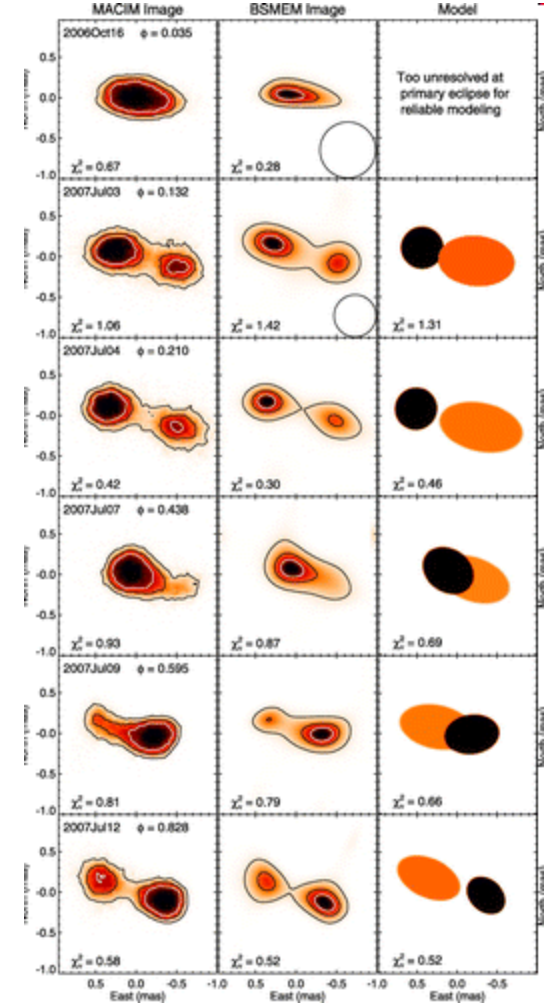
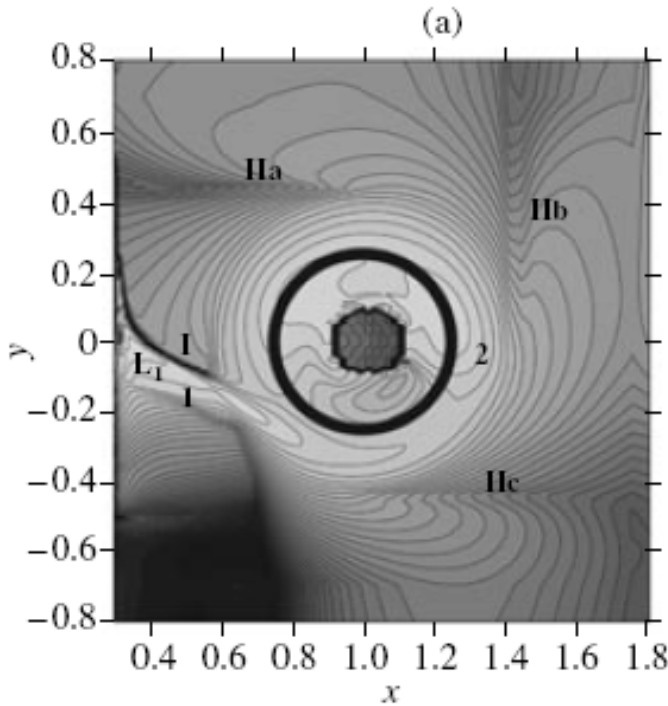
Binaries and Interior Structure: Spica (Aufdenberg et al.)

- Apsidal motion constant: more centrally condensed



Interacting Binaries: Beta Lyr

- MIRC H-band (Zhao et al. 2008) + Classic K-band
- Gas torus around mass gainer (Nazarenko & Glazunova 2006)





Evolved Binaries: Be Stars

- Were Be stars spun up by prior mass transfer in binaries?
- Hot subdwarf companion found in Phi Per and FY CMa
- Search for companions with high dynamic range interferometry

