Near Infrared Observations of Massive Young Stars with Gemini AO

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Adaptive Optics, Lasers, & IFUs

- Deployed on Keck, VLT, and Gemini

Photo credit: Paul Hirst, Gemini Observatory
NIFS/ALTAIR

- NIFS IFU
  - 3” x 3”
  - 0.048” x 0.1”
  - 29 slices
- ALTAIR
  - 177 Actuator SH
  - NGS
  - LGS
NIFS/G45.45+0.06

Feldt et al. (1998)
NIFS/G45.45+0.06

Blum & McGregor (2008)
NIFS/G45.45+0.06
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Blum & McGregor (2008)
NIFS/G45.45+0.06
K3-50 A/Radio

De Pree et al. (1994)
• OKYM3 dominates, point like but confused, OKYM4 resolved in continuum, lines
• Resolve some continuum sources, others look like clumps, Hofmann S8,9 most compact
• Compact cluster, ALTAIR/NIRI image would be helpful
• At 7000 pc, 3” is 0.1 pc
**K3-50 A/NIFS**

- Excitation: Cloudy ionization models
- Grid of 99 models, $10^4$ cm$^{-3}$
- $21127$/Brg + Brg/Dust
- Vary parameters (geometry, density) - $37000$ K < Teff < $45000$

Brg/Dust ($1.8 \times 10^{-5}$)

$21127$/Brg ($0.05$)
• Line Ratios to Br gamma, 21127 indicates hot star (0.04), 20587 (0.3-0.8) complicated by dust, HeI Lya fluorescence, also collisional transfer from $2^3P$ level
• See nebular structure. Density variations or line transfer?
K3-50 A/NIFS

- Br gamma velocity map
- Small scale lobes, not aligned with large scale radio flow, +/-25 kms (+/-6 kms for large scale flow)
- Low mass YSO outflow?
- No continuum source at point of symmetry.