SPECIAL SESSION 5: IR VIEW OF MASSIVE STARS << POSTER REVIEW >>

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We will not have time to discuss all posters, but I hope to highlight some of the most relevant topics.

Vamvatira-Nakou , Naze et al. (#374)

Herschel images (70, 100, 160 um) Question: Determine morphology of dust around 6 LBVs, 2 WRs, 1 O star.

- Ex. LBV - WRAY 15-751 M ~ 0.045 Msun 18" Ring
  M ~ 0.03 Msun 2' Ring *NEW!*

What is the time between these two eruptions? How old/large/cold a ring is too old, large or cold to see?

Gas (ionized) spectrum, M ~ 2 Msun

Does the gas metallicity-ratios tell you anything about the evolutionary state of the star during the two eruptions?

Nakamura et al. (#372) Eta Car
Matsura et al. (#369) SN 1987A

Eta Car: MiniTAO (Atacama, Chile). First spatially resolved images beyond 30 um. Question: to determine dust distribution.
M = 0.12 Msun of dust, 80% in torus. Lobes came from the 1843 eruption.

SN 1987A: Herschel (satellite). 5 bands, 100-500 um.
Question: how much dust comes from Type II SNe?
M=0.4-0.7 Msun of dust, from eruption(only?), mostly Silicates, amorphous Carbon, some Fe.

Must it come only from the eruption? What about Eta-Car like mass-loss before? What's the morphology of 87A dust?

Lee et al. (#380) Classical Be with NIR excess
Oey et al. (#383) SMC B[e] w/out NIR excess

We have a coincident pair of peculiarities.

Show of hands: which is more strange?

What does the spectra tell us?
- The B[e] has extremely weak forbidden lines.
- The CBe ALSO shows some forbidden lines.

My first guess:
The B[e] is transitional, the CBe is actually a weak B[e].

Kervella et al. (#373) Imaging Betelgeuse

IOTA/IONIC Interferometric IR images. Question: Map size and structure (convective motions) of the envelope.

Size: $\theta \sim$ 45”, unchanged in thermal IR in >10 yrs

Why doesn’t Betelgeuse pulsate (long period variable)? What is the story that it has been shrinking?

Structure: YES, at the few % flux level, but difficult to constrain yet. Baseline vs Orientation map (*u,v plane*) needs more points.

How do you deal with variability in size and features when extending the sampling of the *u,v* plane?

Geballe, Najarro et al. (#0) GC Quintuplet Stars

J, H-band Spectra. Question: Do we see the photosphere and can we ID the stars if we push to the bluer bands?

YES! Q1, Q2, Q3 and Q4 all show strong C II, III. He (and of course H) lines are either weak or missing. No CIV indicates WC9 or later types.

Q2 (one of the pinwheel objects) shows spectral variability, perhaps due to changing orbital view and/or dust production.

Bonanos et al. (#377) Massive Binaries

I-band, NIR photometry and spectroscopy.

Question: What is the *real* mass of massive stars?

Targeting the youngest and most massive clusters known in the MW requires observations in the NIR (for this study: Wd1, Danks 1 & 2, Arches).

Now have 18 stars with masses > 30 Msun.

Most massive system: WR20a, WN6+WN6, 80 + 80 Msun

Marco/Negueruela (#371) OpCl Stock 8
Panwar et al. (#376) IC 1805 (Cas)

Opt/NIR Photometry/Spectroscopy

Question: What is the nature (age, mass) and evolutionary state of the young stars?

Stock 8: Diffuse optical cluster, O7.5V, O8III, O8V, O9V.. But identified several other visible, small clusters to the north. All four clusters have similar age/distance of a few million years, D ~ 2.2 kpc.

IC 1805: Well known OB system. Studied NIR sources. Class I more rare, more clumped, found nearest nebulosity. SED of two Class I sources suggest mass, 8-9 Msun.

Damineli et al (#381) Distances to IR clusters

NIR and MIR photometry. Question: How do photometric distances compare to kinematic distances for 3 dozen young (HII) regions, most claimed to be "massive"

Analysis based on color-mag diagrams indicates about half of the photometric distances are consistent with kinematic ones. However, the other half are significantly CLOSER, and this is supported by spectro-photometric work of others.

Was it mostly the GHII, that moved in, or all? Doesn't this emphasis the difficulty of seeing inward past the Sag Arm?

Hou et al. (#0382) A-type stars
Freimanis (#379) Polarized RT equations

1) Improve estimates of T_{eff}, log *g*, [Fe/H] of A stars
By means of relating spectral indexes (traced using Kurucz models) versus these input parameters to the model. To be used with LAMOST spectral survey.

2) Derived Radiative Transfer Eqn for several coordinate systems of astrophysical interest:

- Oblate Spheres (fast rotating stars)
- Toroidal Systems (disks and outflows)