

MESS - Mass loss of Evolved StarS

Initial Results

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on behalf of the MESS consortium

MESS

In its most general terms this GT KP aims at studying the

- Circumstellar matter in evolved objects

AGB, Post-AGB, PNe, RSG, WR, LBV, SN

- Photometric mapping of nearby objects
- Spectroscopy of nearby objects
- SPIRE and PACS
- Mass-loss dominates the evolution
How? How much? Time evolution? Spherical?
Production of dust

Partners involved

Partner	“origin”	hours	special interest
Belgium	PACS GT	145	KUL (AGB, post-AGB, PN, WR, LBV) ROB (AGB, PN) ULB (binary AGB) IAGL (WR, LBV)
Vienna	PACS GT	47	AGB
Heidelberg	PACS GT	10	SN remnants
SAG 6	SPIRE GT	80	SN, AGB, post-AGB, PN
HSC	HSC	26	special type of post-AGB
MS	MS	5	Molecules in specific stars
		—	
		313	

Implementation (Photo)

PACS:

Scan Maps at 70 + 160 μm

78 AGB/RSG, 16 post-AGB/PN, 8 WR/LBV, 5 SN

~30 RELEASED

SPIRE:

Large maps at 250, 350, 500 μm

26 AGB/RSG, 8 post-AGB/PN, 5 SN

ALL RELEASED

Implementation (Spectro)

PACS:

Concatenation of “blue” and “red” scans to cover entire 60-210 μm region

Spatial information: 5×5 pixels = $47'' \times 47''$

27 AGB/RSG, 26 post-AGB/PN, 2 WR/LBV, 4 SN

TO BE RELEASED WITHIN A MONTH

SPIRE:

Full FTS scans

9 AGB/RSG, 10 post-AGB/PN, 2 WR/LBV, 1 SN

ALL RELEASED

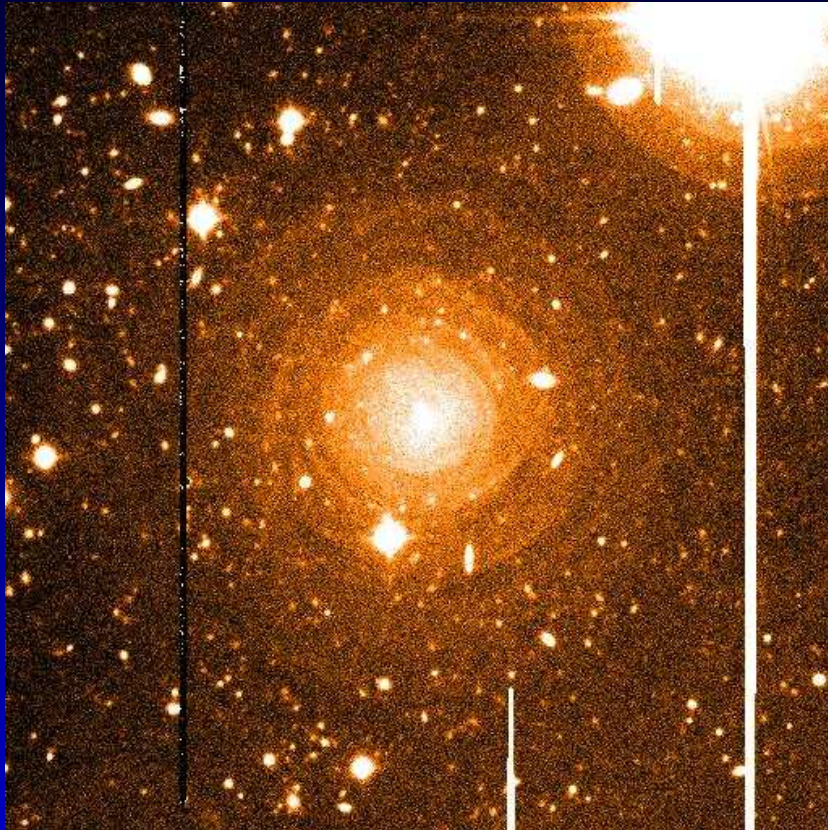
SDP: executed

obsid	OD	Target	AOR
1342186299	164	CW Leo	PacsPhoto
1342186298	164	CW Leo	PacsPhoto
1342186293	164	CW Leo	SpirePhotoLargeScan
1342185578	149	NGC 6720	PacsPhoto
1342185577	149	NGC 6720	PacsPhoto
1342185534	145	NGC 6720	SpirePhotoLargeScan
1342185550	148	HD 44179	PacsPhoto
1342185549	148	HD 44179	PacsPhoto
1342183682	121	HD 44179	SpirePhotoLargeScan
1342183681	121	Cas A	SpirePhotoLargeScan
1342185570	148	S Cep	PacsPhoto (\Leftarrow chopped-raster)
1342185569	148	S Cep	PacsPhoto
1342185568	148	TT Cyg	PacsPhoto (\Leftarrow small-source)
1342185567	148	TT Cyg	PacsPhoto

SDP: pending

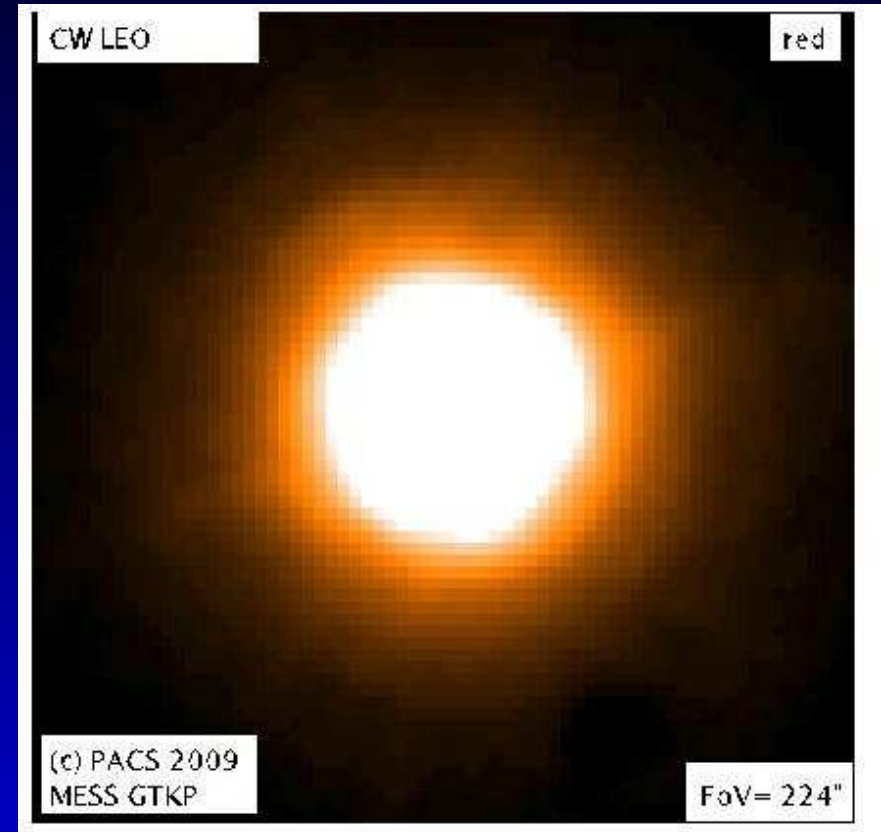
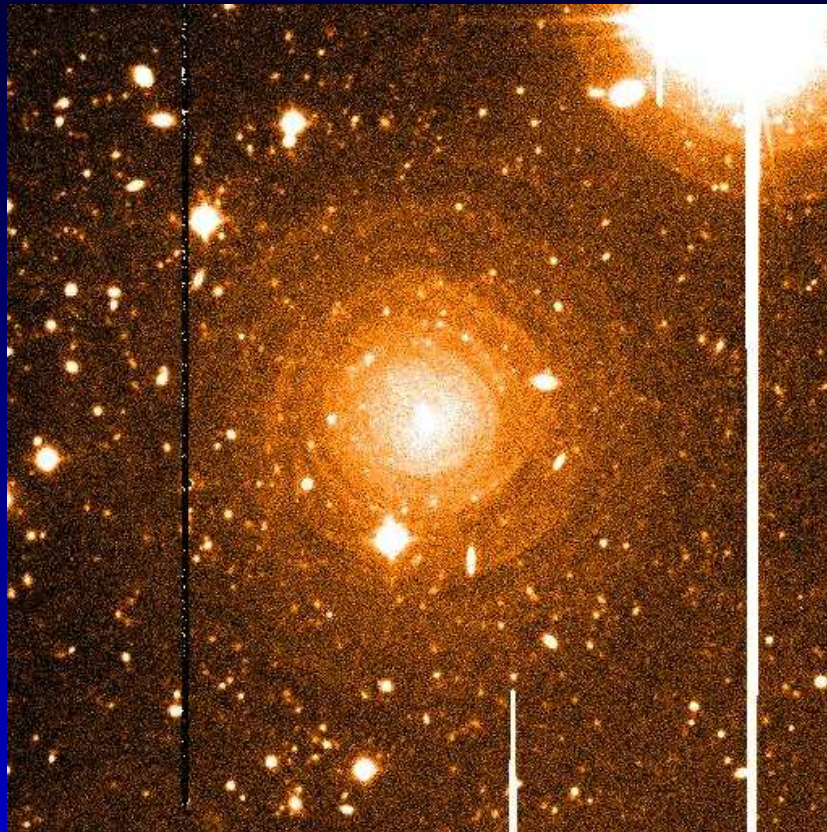
obsid	OD	Target	AOR
		Cas A	PacsPhoto (observed 15 Dec.)
		CW Leo	PACS SED scan (engineering mode)
		VY CMa	PACS SED scan (engineering mode)
		NGC 7027	PACS SED scan (engineering mode)
		HD 44179	PACS SED scan
		CW Leo	SPIRE FTS (engineering mode)
		VY CMa	SPIRE FTS (engineering mode)
		NGC 7027	SPIRE FTS
		HD 44179	SPIRE FTS

CW Leo



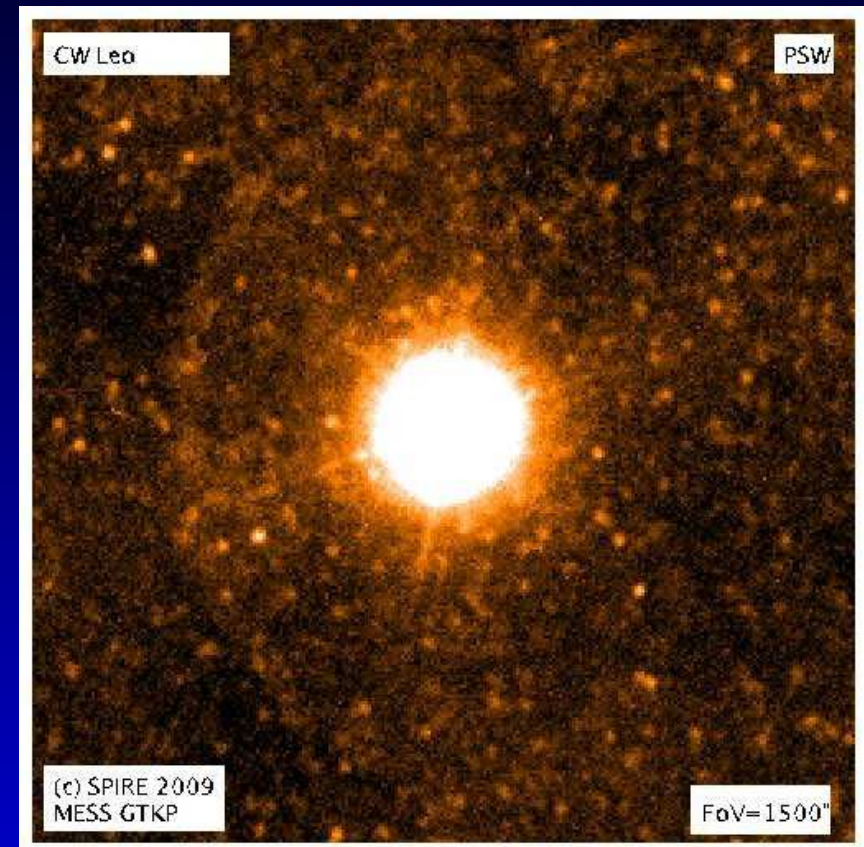
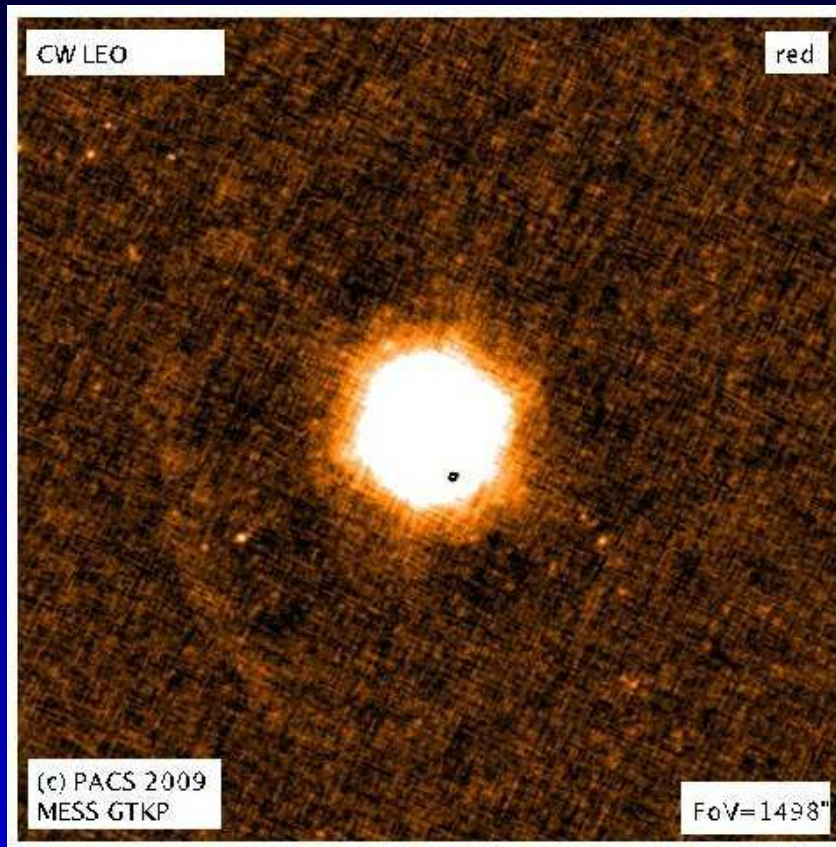
Optical (Mauron & Huggins 1999)

CW Leo



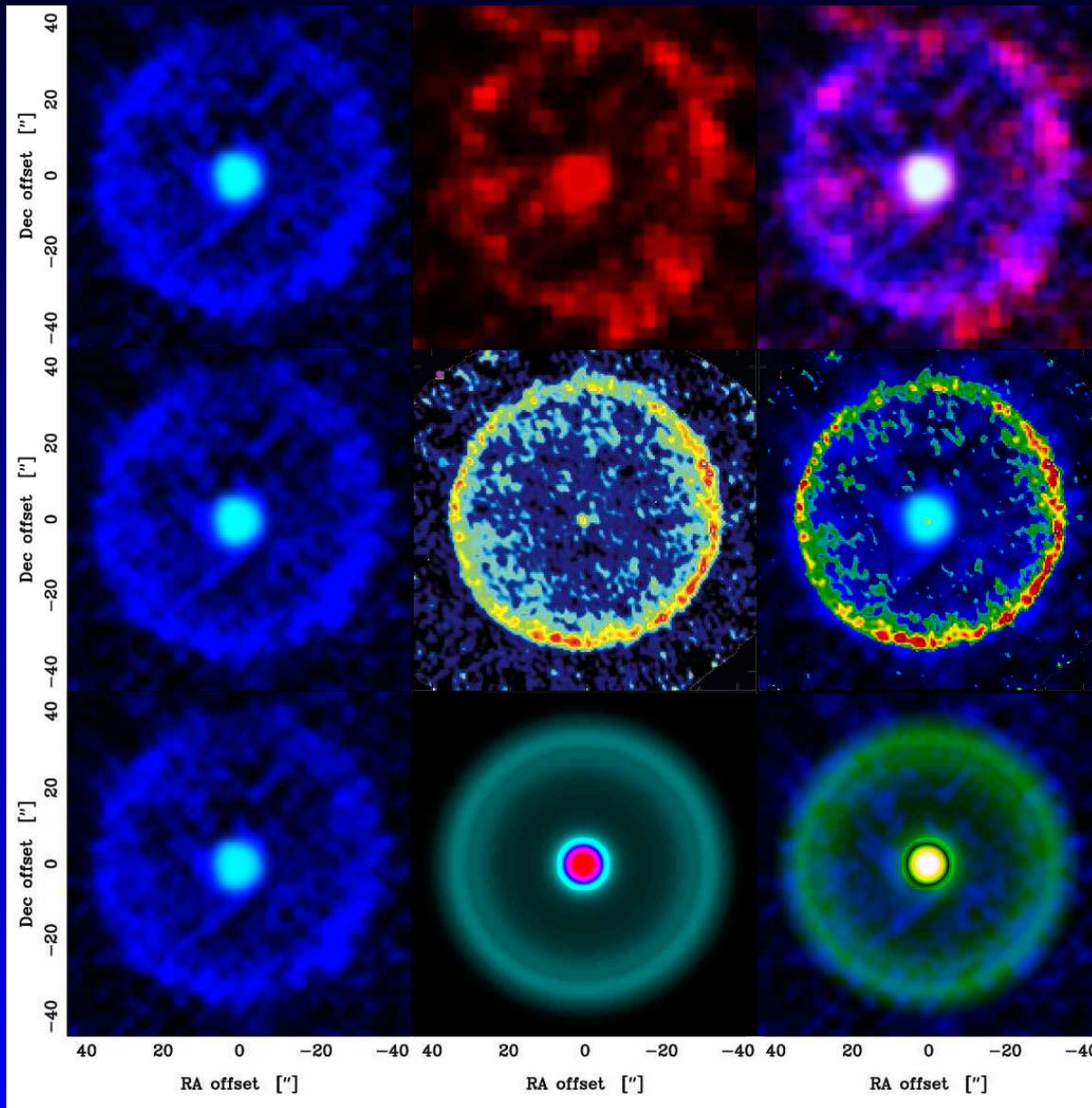
Optical (Mauron & Huggins 1999) and
PACS 160 micron

CW Leo



PACS 160 and SPIRE 250 micron
 $8.2' \times 9.2' \Rightarrow$ flow-timescale $\sim 11\ 000$ years

TT Cyg



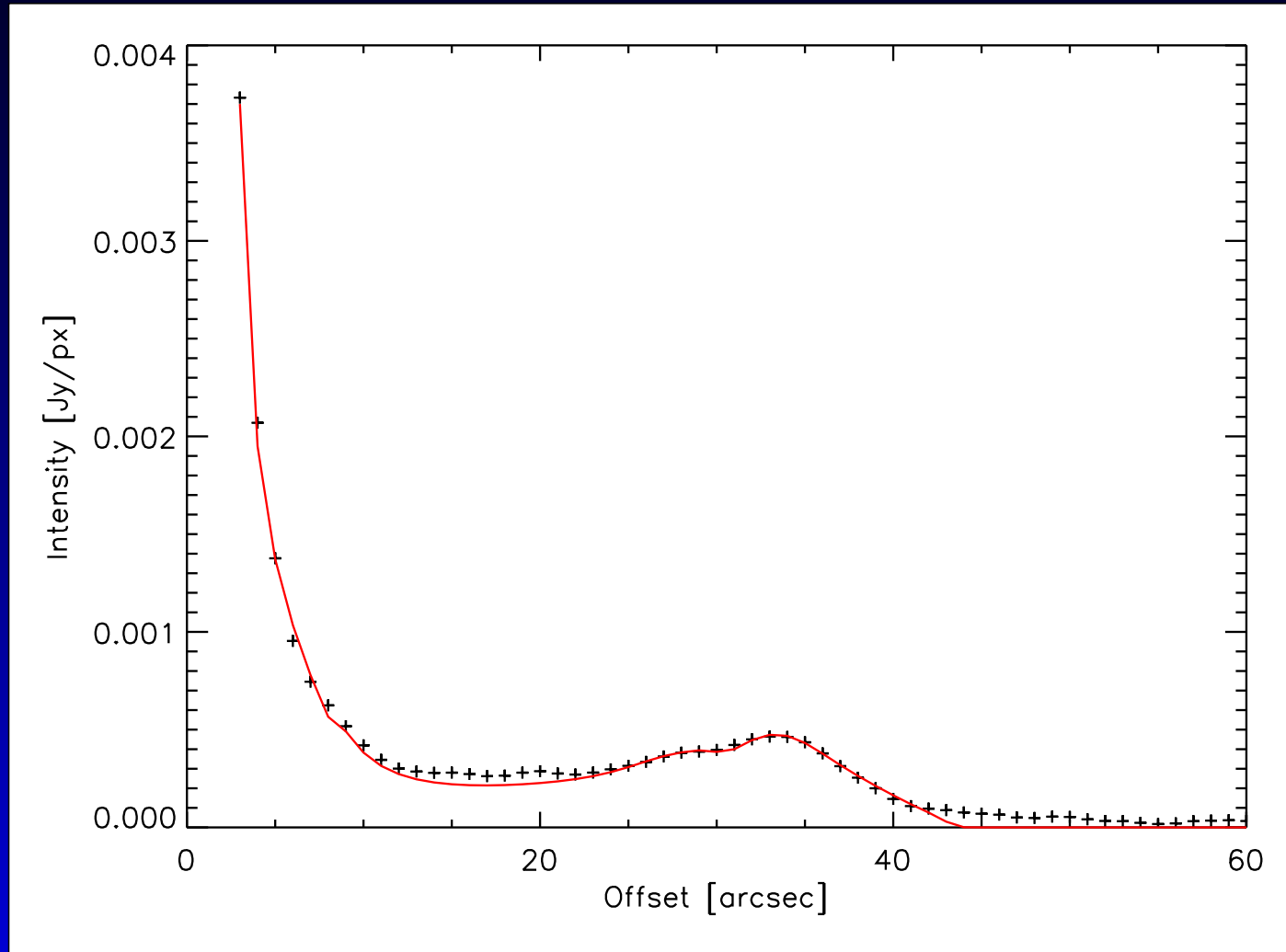
PACS:
blue / red /
combined

PACS blue
/ CO (1-0) /
combined

PACS blue
/ model /
combined

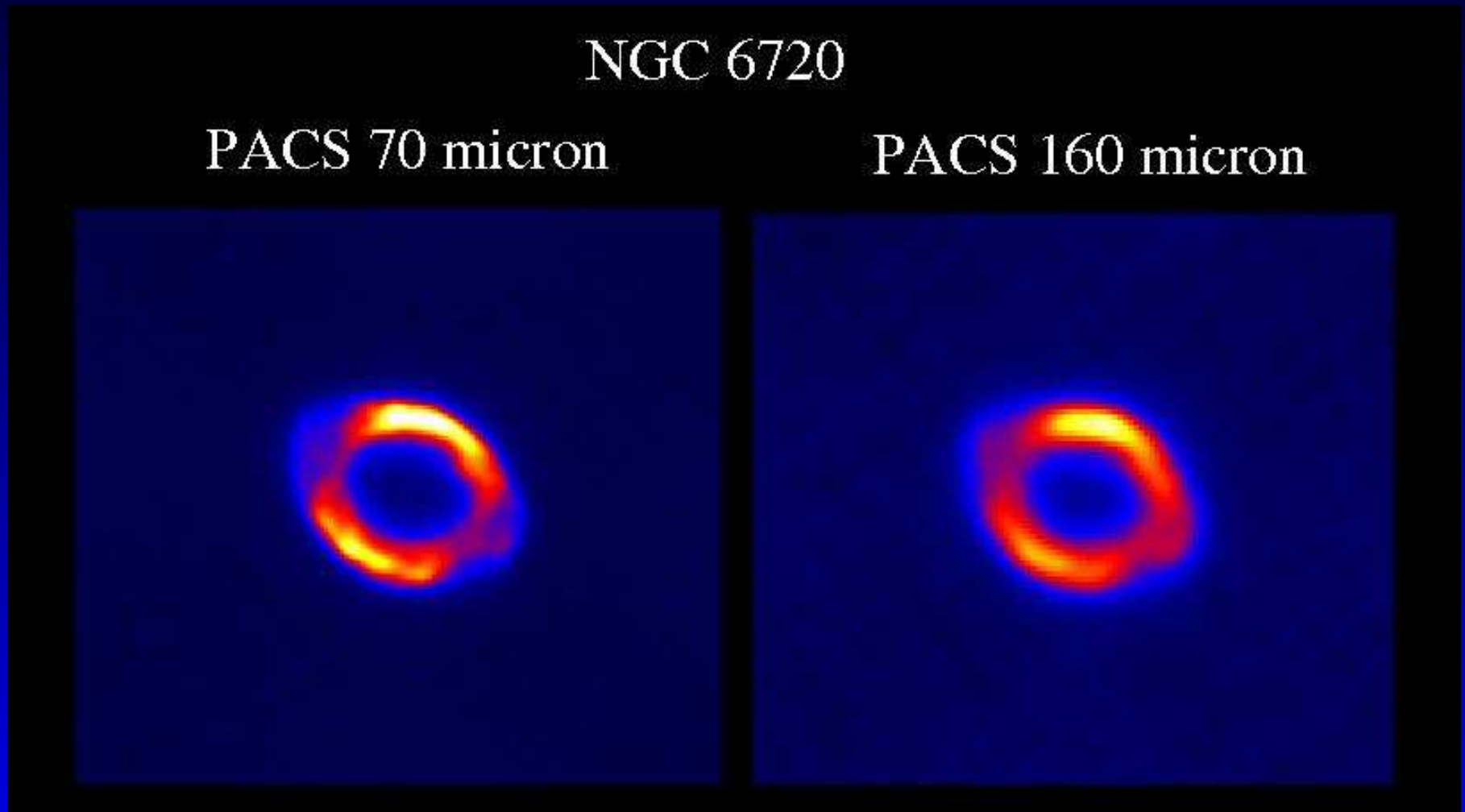
CO data from Olofsson et al. (2000)

TT Cyg

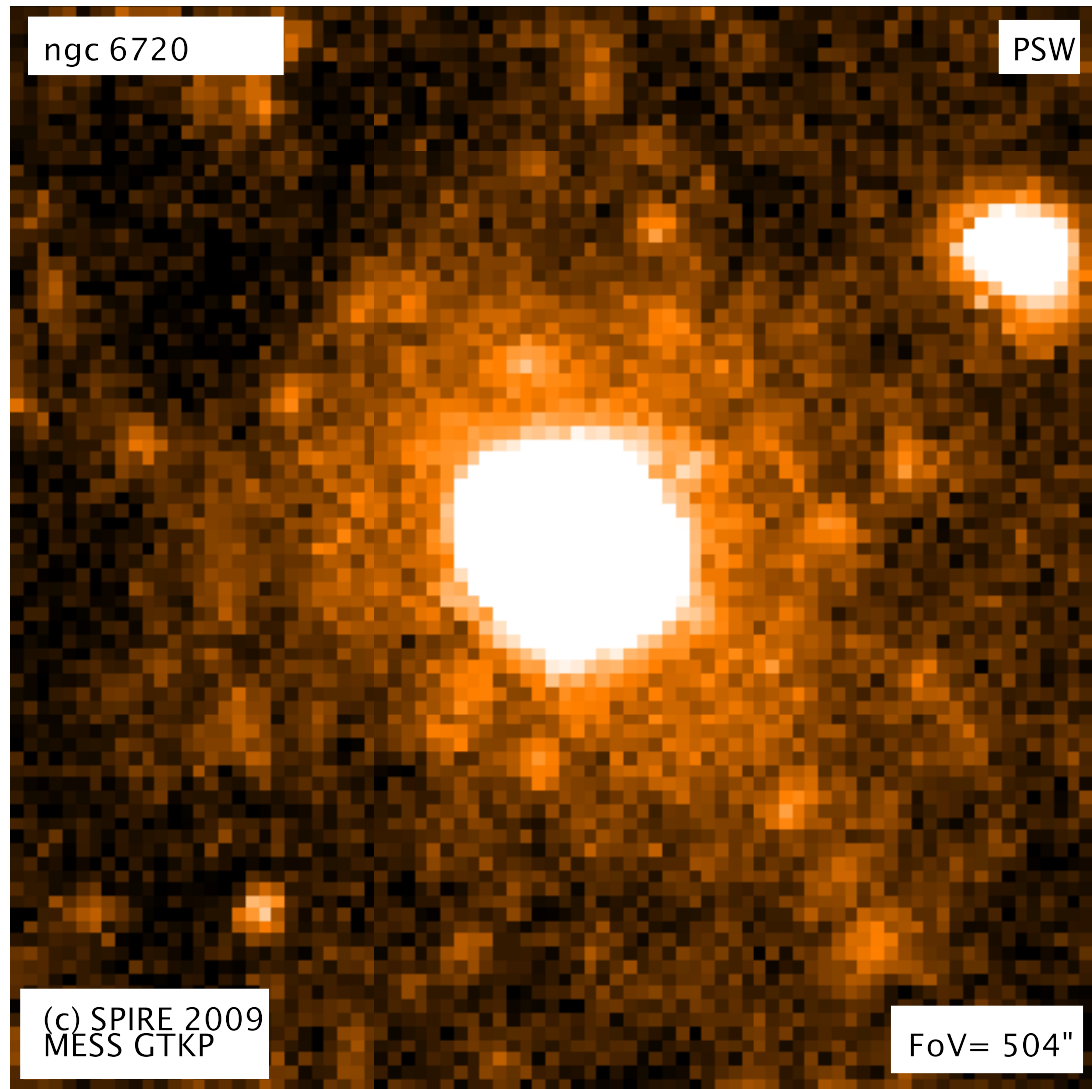


$R_{in} = 32''$, $R_{out} = 42''$ with $T_{inner} = 40.8$ K

NGC 6720



NGC 6720



NGC 6720

Calar Alto H₂
V. Peris et al.



NGC 6720

PACS blue
70 micron



Conclusions

- Detected "old" dust mass loss in AGB stars !
- Issues
 - non-homogeneous coverage map in PACS (solved)
 - details of the high-pass filter
 - details of the deglitching
 - PSF subtraction

MESS is produced by

A. Baier, M. Barlow, B. Baumann, J. Blommaert, J. Bouwman,
P. Cernicharo, M. Cohen, L. Decin, L. Dunne, K. Exter,
P. Garcia-Lario, H. Gomez, M.A.T. Groenewegen, P. Hargrave,
Th. Henning, D. Hutsemékers, R. Ivison, F. Kerschbaum,
O. Krause, D. Ladjal, T. Lim, M. Mecina, W. Novotny-Schipper,
G. Olofsson, R. Ottensamer, E. Polehampton, Th. Posch,
G. Rauw, P. Royer, B. Sibthorpe, B. Swinyard, T. Ueta,
B. Vandenbussche, G. Van de Steene, P. van Hoof, H. Van
Winckel, E. Verdugo, H. Walker, C. Waelkens, R. Wesson

FWF-projects: P18939, I163, P21988

ASAP-CO-016/03

PRODEX C90371

THE END