

# 20 Years of IR Astronomy at Konkoly Observatory

**Lajos G. Balázs (Konkoly Observatory)**

## Collaborators:

Ábrahám, Péter (KO)

Csizmadia, Szilárd (KO)

Kiss, Csaba (KO)

Kiss, Zoltán (ELTE DA,  
Baja Obs)

Kóspál, Ágnes (KO)

Könyves, Vera (ELTE DA)

Kun, Mária (KO)

Moór, Attila (KO)

Mosoni, László (KO)

Tóth, Imre (KO)

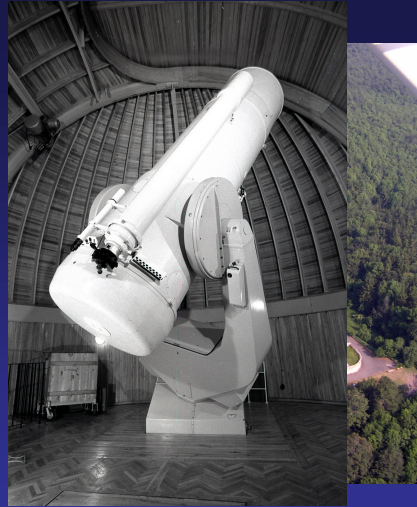
Tóth, L. Viktor (ELTE DA, KO)

# Prelude

1962: first light of  
60/90/180 cm Schmidt

Start wide field imaging in Konkoly Observatory

Spectral classification and multicolor photometry



Objects studied (relevant for later FIR investigations): comets, young stellar objects ( $H\alpha$  emission), distribution of interstellar dust.

# The IRAS era

**1983:** ground based observations with Schmidt for fast moving objects program

**1984:** First IRAS results released

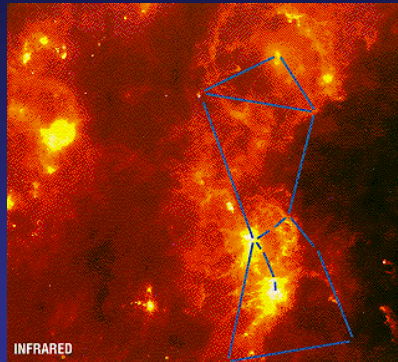
**1984:** Contact John Davies (Leicester Univ.) for IRAS data

**1985:** Response from Harm Habing (Leiden Obs.)

**1985:** Lajos Balázs's visit in Leiden – first IRAS data arrived to Hungary

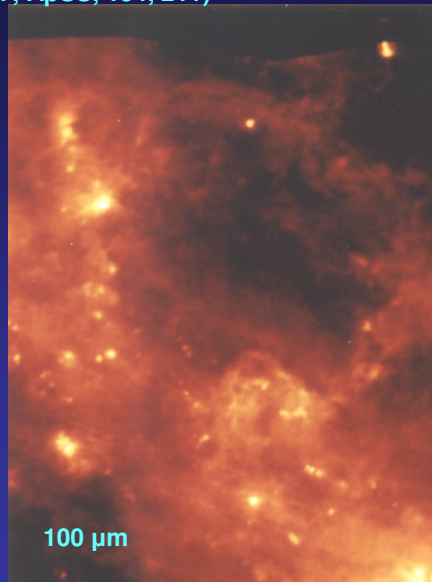
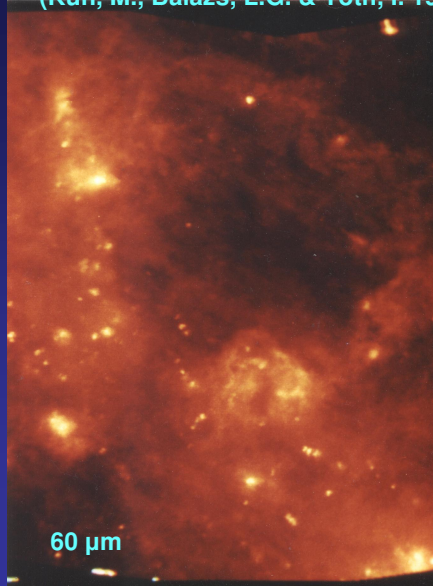
**1986:** First Hungarian IRAS-based publication (L. Szabados, IBVS No. 2910 )

**1986:** Cepheus Bubble was discovered on IRAS maps



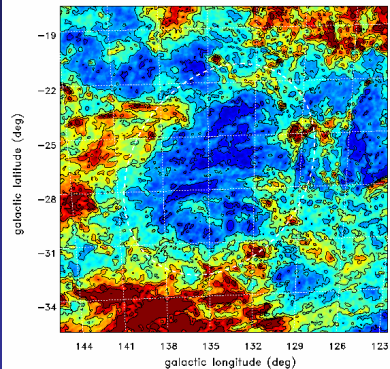
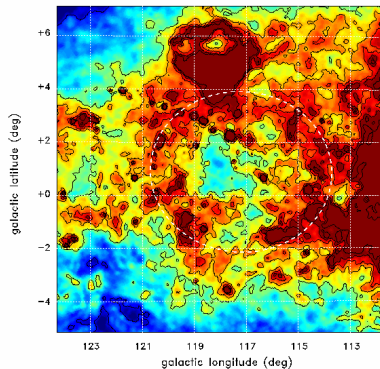
# The Cepheus Bubble (Harm Habing: "They've got it!")

(Kun, M., Balázs, L.G. & Tóth, I. 1987, ApSS, 134, 211)



# Interstellar bubbles II.

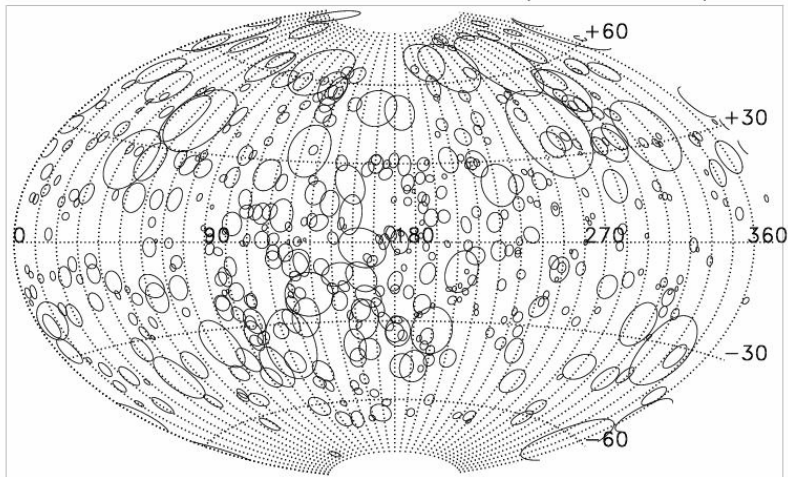
Kiss, Cs., Moór, A., & Tóth, L. V. , 2004, A&A, 418, 131



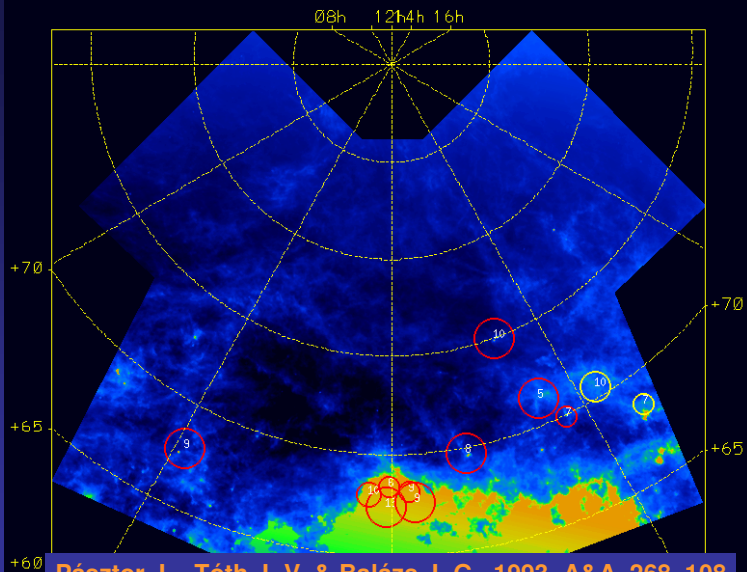
# Interstellar bubbles III.

Könyves, V., Kiss, Cs.; Moór, A., 2004, PADEU, 14, 101

Distribution of Far-Infrared Loops in the Sky

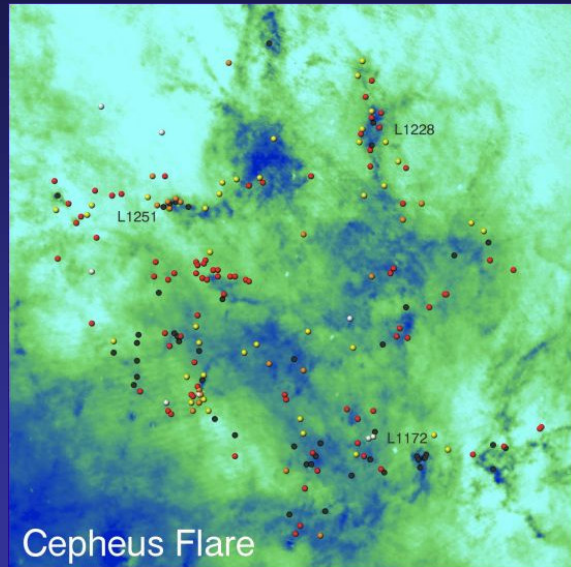


# Star formation I.



Pásztor, L., Tóth, L.V. & Balázs, L.G., 1993, A&A, 268, 108  
Kun, M., Prusti, T., 1993, A&A, 272, 235

# Star formation II.



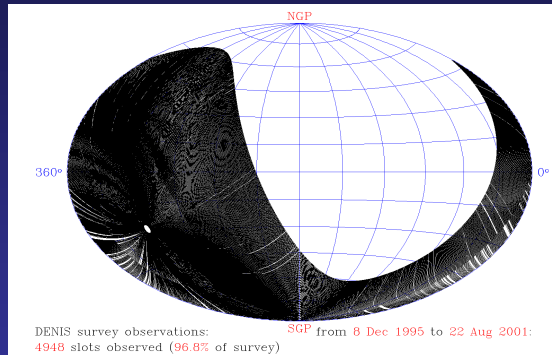
Kun, M., 1998, ApJS, 115, 59



# Participation in DENIS

## DENIS (I, H, K)

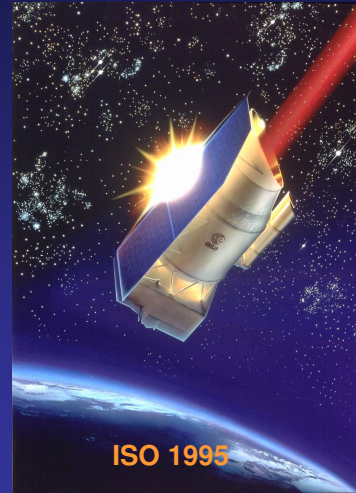
- Ground based project
- ESO 1m telescope
- Southern hemisphere



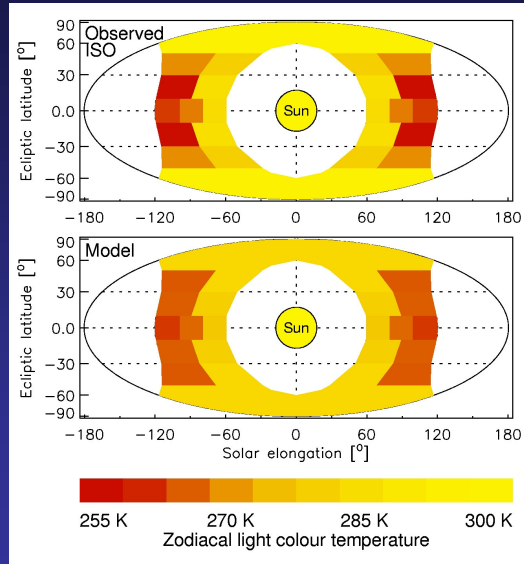
Epchtein, N.; Deul, E.; Derriere, S.; Borsenberger, J.; Egret, D.; Simon, G.; Alard, C.; Balázs, L. G.; de Batz, B.; Cioni, M.-R.; and 21 coauthors , 1999, A&A, 349, 236

# The ISO era

- 1992: Initiative from MPI fuer Astronomie
- 1993, 1994: Peter Abraham's visits in Heidelberg
- 1995: Peter Abraham joined the ISOPHOT group
- 1997: Viktor Toth joined the ISOPHOT group
- 2000: Csaba Kiss joined the ISOPHOT group
- 2000: PRODEX contract was signed with ESA



# Solar system I. (Zodiacal Light)



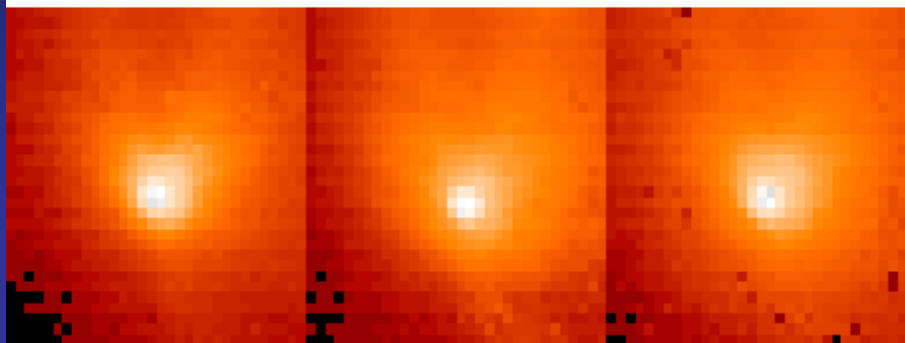
Leinert, Ch., Ábrahám, P. et al, 2002, *A&A* ,393, 1073

# Solar system II. (comets)

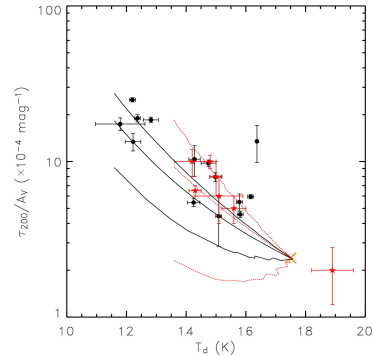
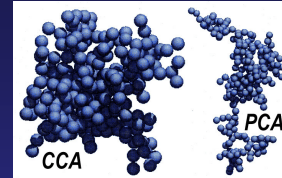
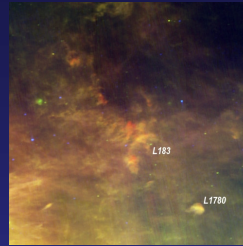
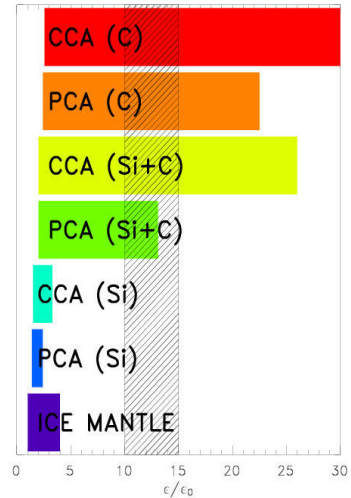
ISO ISOCAM – Comet Hale–Bopp (C/1995 O1): 03–OCT–1996

P. Lamy, I. Toth,  
Laboratoire d'Astrophysique de Marseille (LAM/LAS) CNRS & Konkoly  
Observatory, Budapest

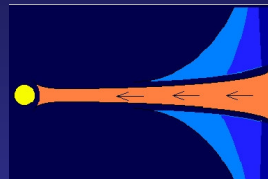
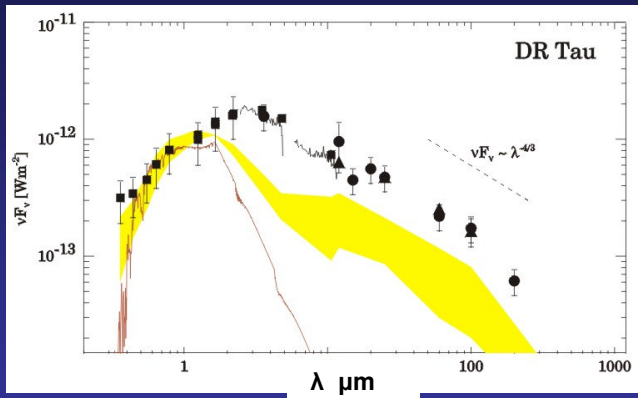
Size of images: 104196 km



# A csillagközi por emissziós Dust of the Milky Way tűzpor és a csillagközi por emissziós infravörösben

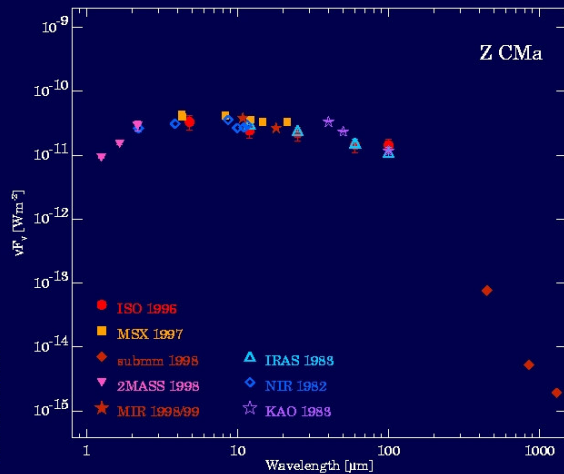
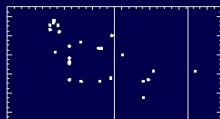


# Pre Main Sequence stars I



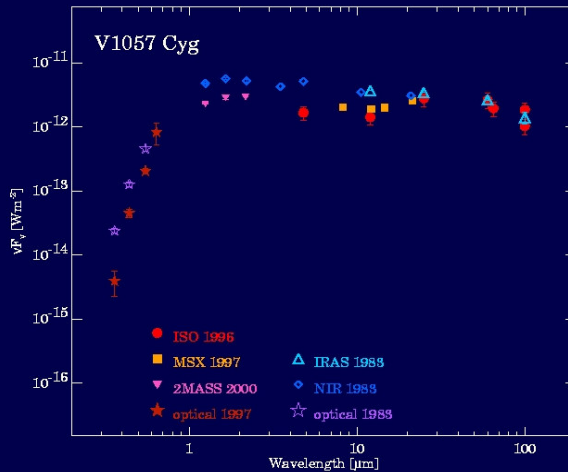
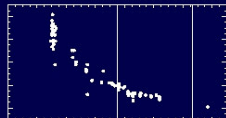
# Pre Main Sequence stars II. (FUOR)

Z CMa



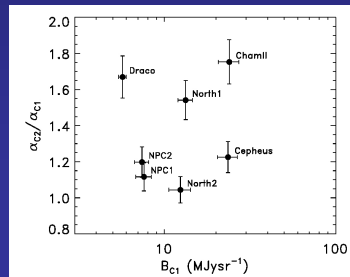
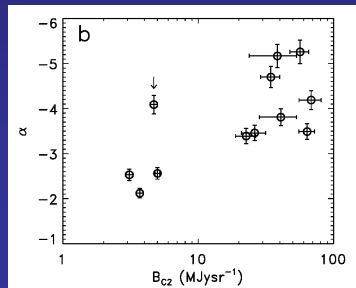
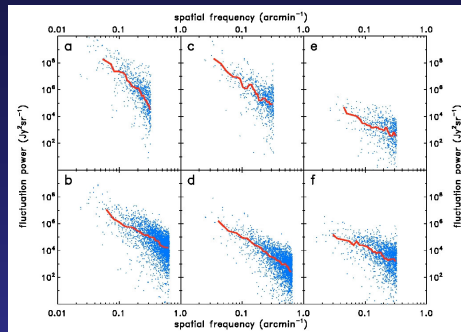
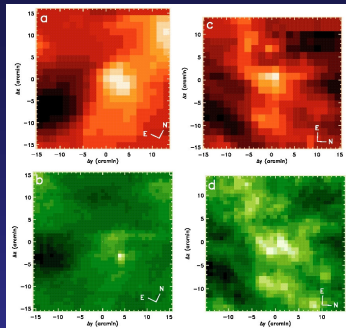
# Pre Main Sequence stars III. (FUOR)

V1057 Cyg

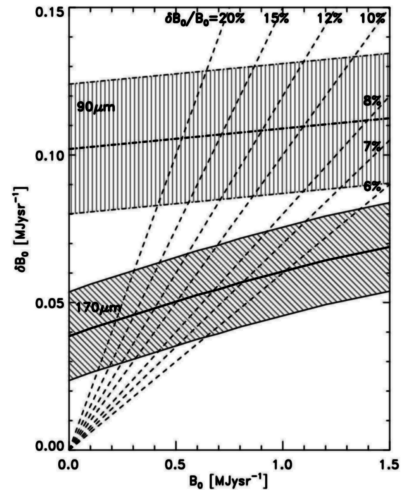
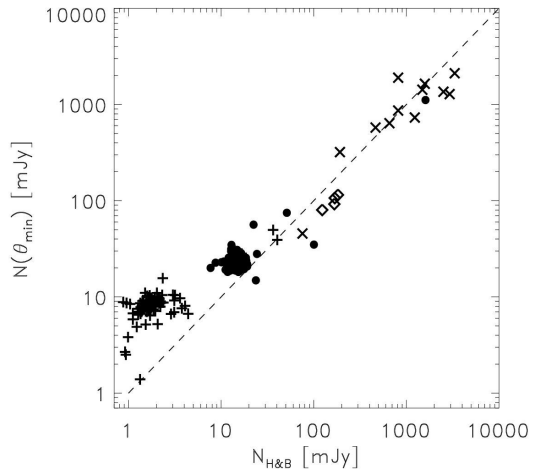




# Extragalactic IR background I.



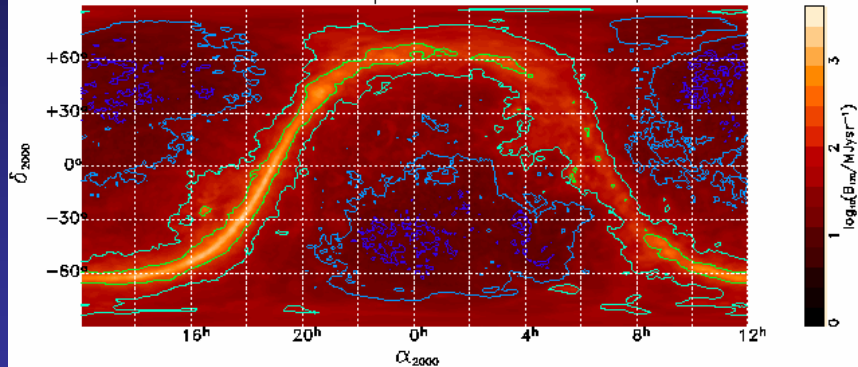
# A kozmikus infravörös háttér detektálása az égi Extragalactic IR background II. háttér fluktuációival



# International projects I.

## Estimation of confusion noise

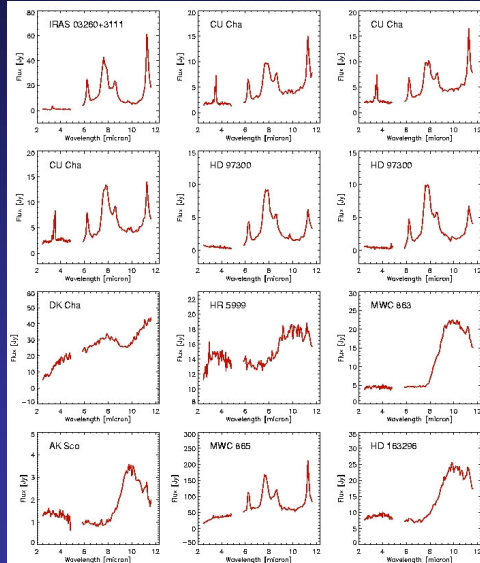
cirrus confusion noise predictions for ASTRO-F  $170\mu\text{m}$



cirrus confusion noise contours: 2mJy, 10mJy, 100mJy, 1000mJy

# International projects II.

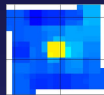
## ISOPHOT-S mid-IR spectral atlas



152 spectra on 122 pre-MS stars

- ISOPHOT-S: 2-12 micron spectrophotometer
- Features: PAH, silicate, ice
- Part of ISO Archive

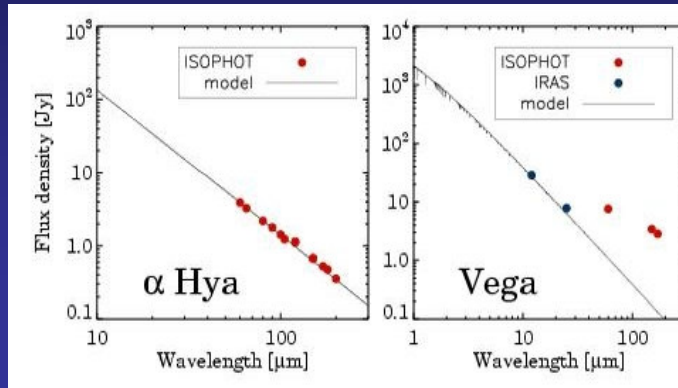
# International projects III.



FIR catalogue of MS stars for the ISO Archive

Moór, A., Ábrahám, P., Csizmadia, Sz., Kiss, Cs.

A photometric catalogue of 555 measurements on 229 stars



# International projects IV.

Infrared

1. VLT/IR

2. MATIS

- (1) OCA Nice
- (2) MPIA Heidelberg
- (3) MPIfR Bonn
- (4) ASTRON Dwingeloo
- (5) Astr. Inst. Amsterdam
- (6) Leiden Observatory
- (7) LUAN Nice
- (8) Torun Centre for Astro
- (9) Konkoly Observatory

CO-Is

P. Abraham (9)

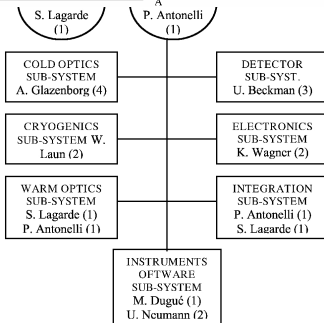
A. Niedzielski (8)

F. Vakili (7)

L.B.F.M. Waters (5)

G. Weigelt (3)

T. Henning (2)



Experiment)

Construction

DARWIN

# How to proceed?





*Thank  
you!*

