The Lambda Orionis Star Forming Region. A study in X-Rays

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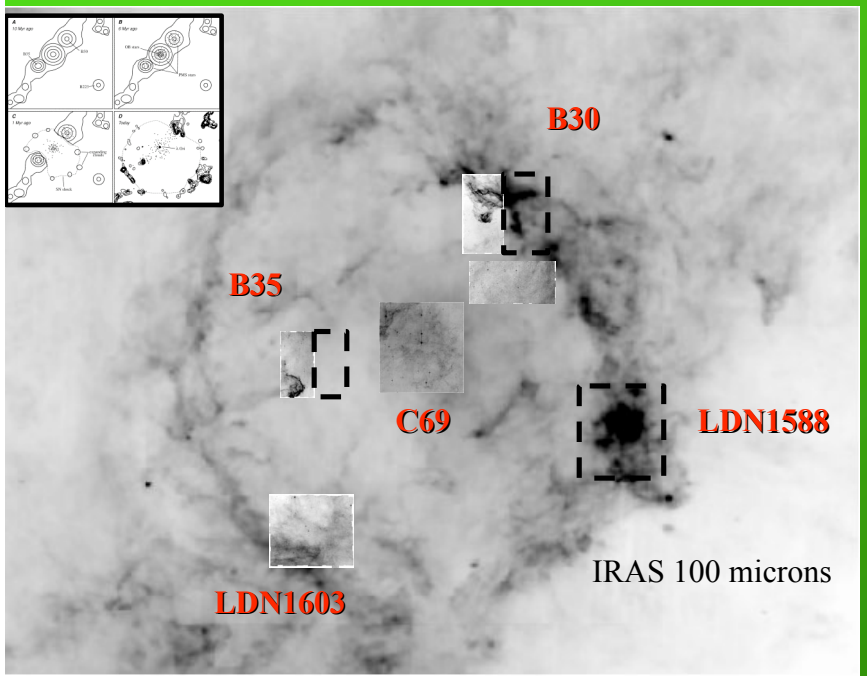


Introduction

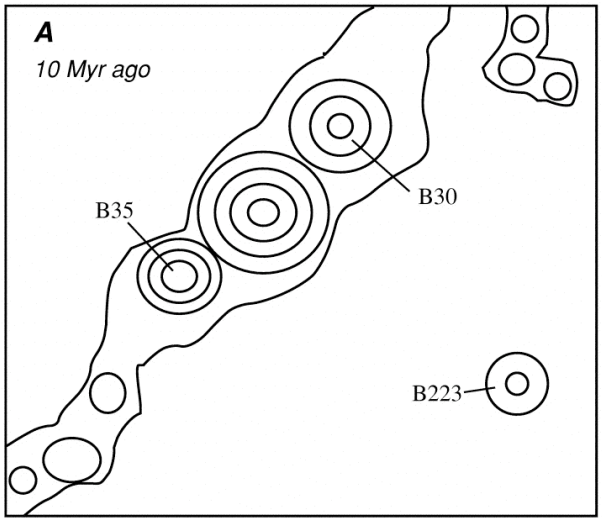
•Lambda Orionis belongs to the Orion constellation.

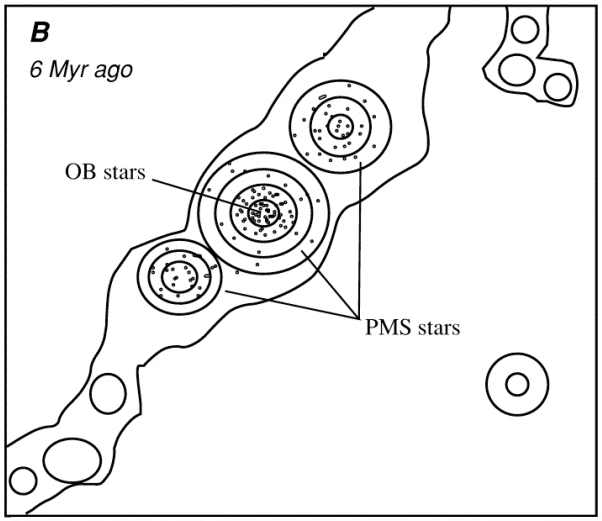
•Around Lambda Orionis there is a Star Forming Region.

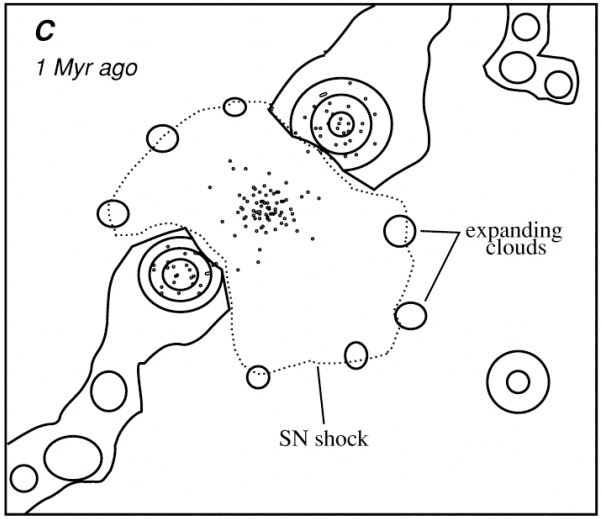
Objective

•Identify with X-Rays (XMM data) very low mass members from LOSFR and derive the Initial Mass Function, IMF.

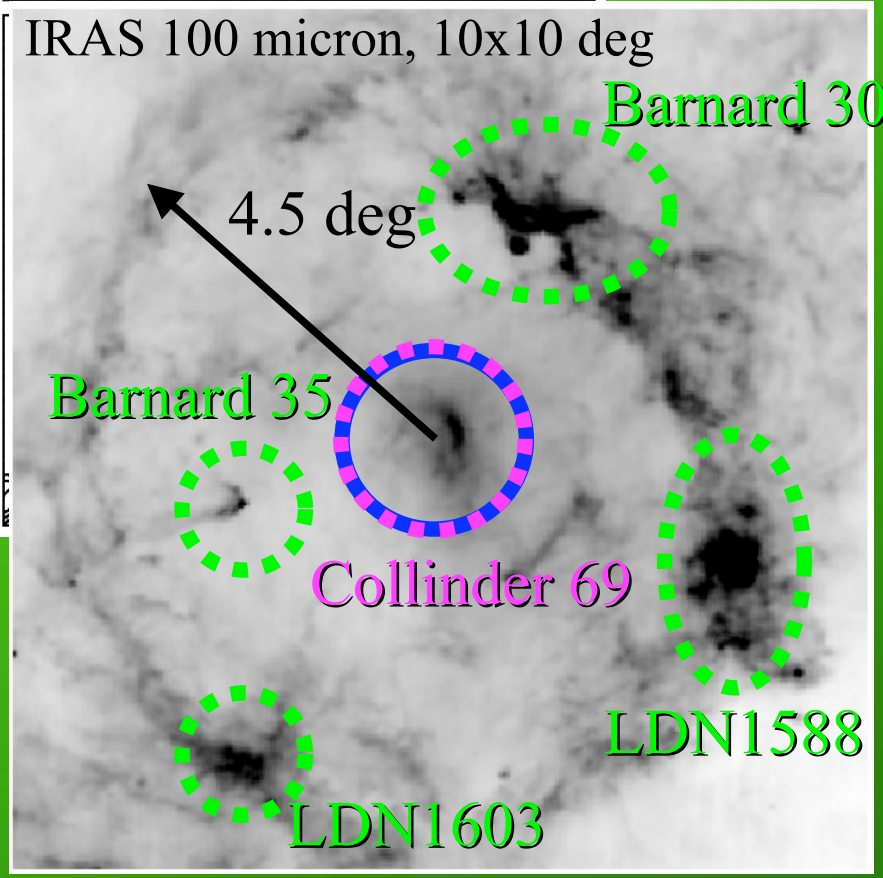
The Lambda Orionis Star Forming Region: star formation triggered by a SN?





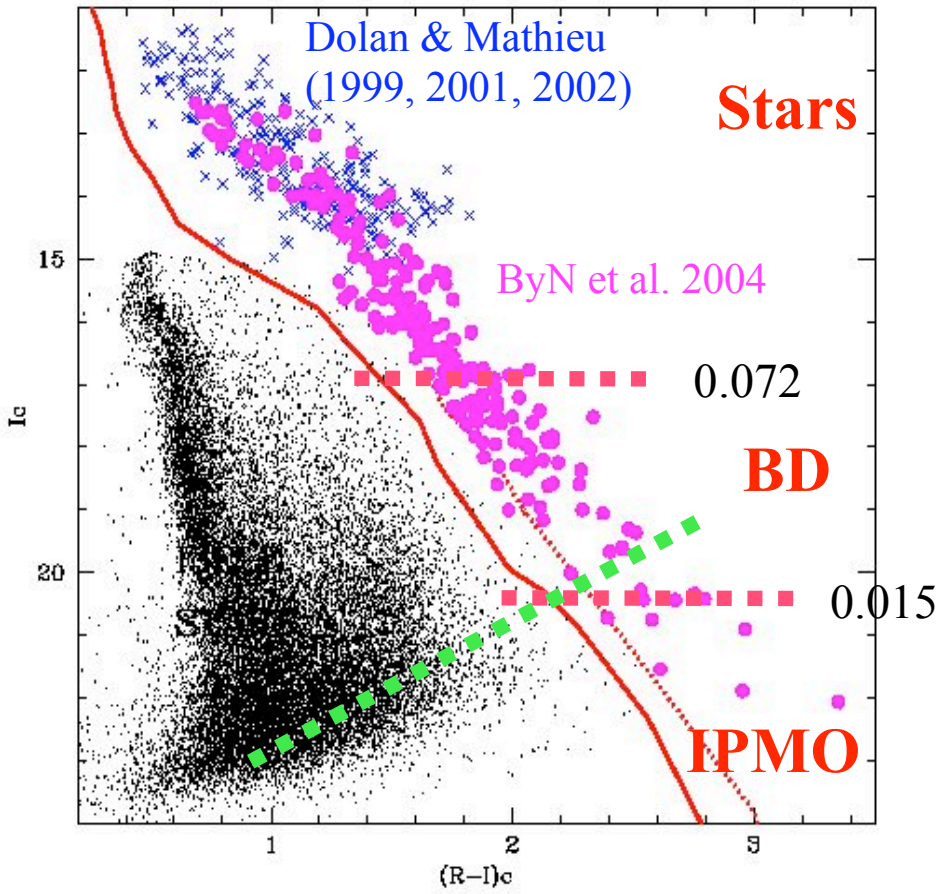


Doland & Mathieu (2002)



Collinder 69, 6 Myr
Barnad 30, 3 Myr
Barnard 35, 3 Myr
LDN1603, 1 Myr
LDN1588, 1Myr

Lambda Orionis: a multiwavelength approach



CFHT + 12K Mosaic

The cluster has been studied already in others wavelengths.

-Optical.- vbyRIZ
-Near IR.- JHK
-Mid-IR.- Spitzer 3.6 - 24 microns
-Optical and near-IR spectroscopy

Barrado y Navascués et al. 2004, 2005

Why X-Ray Data?

1.X-Rays information is essential.

2.The interest in a multiwavelengths study includes X-rays.

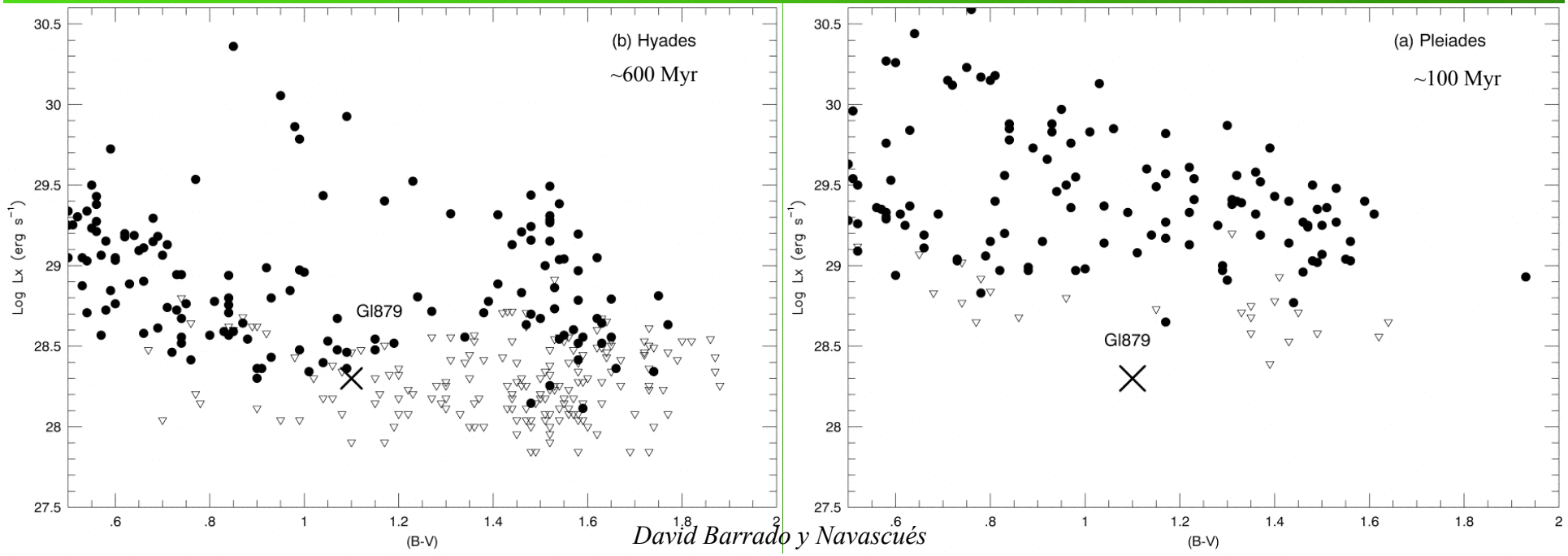
3. Verify the universality of the IMF

1. Information from X-ray

•Very low-mass members can be detected in X-Rays (not affected by strong extinction).

•Study of magnetic activity of already confirmed members.

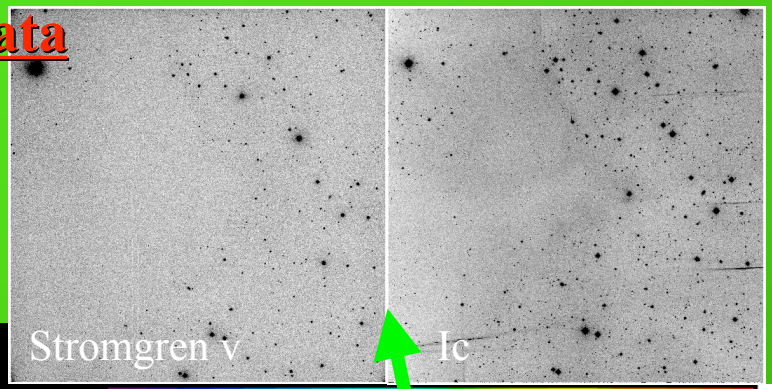
•Study the evolution of the X-Ray Luminosity Functions.

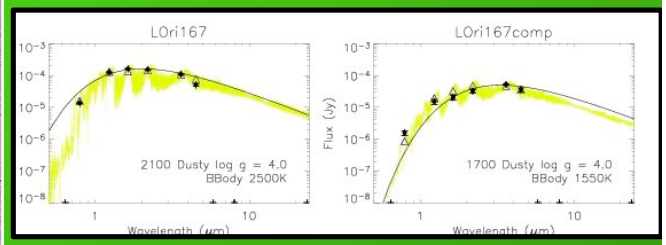


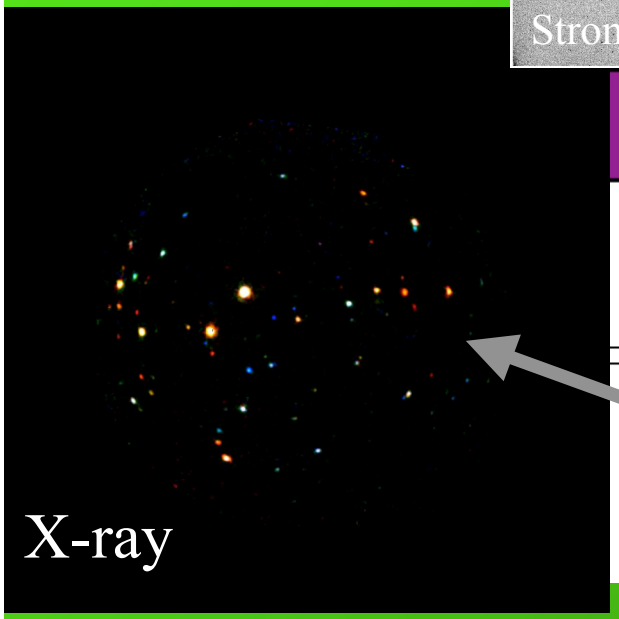
2. The interest in a multiwavelength data

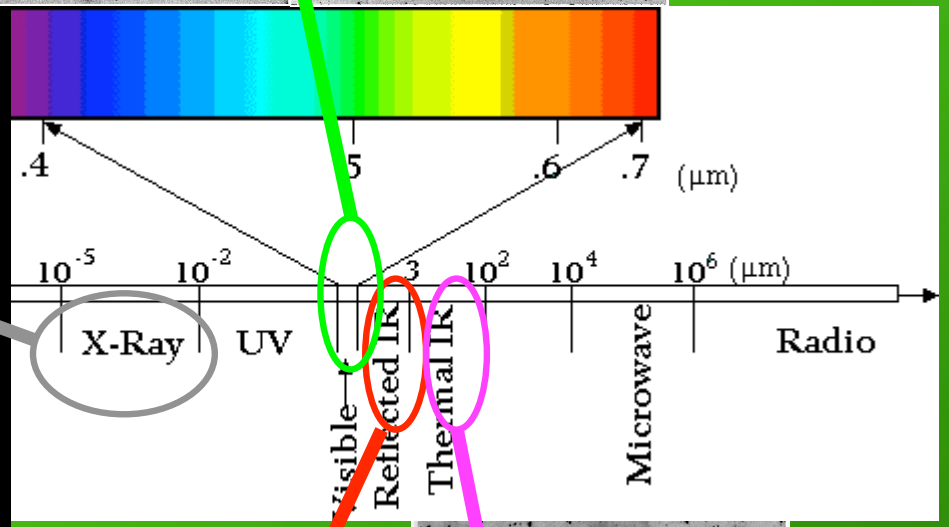
BUSCA, optical

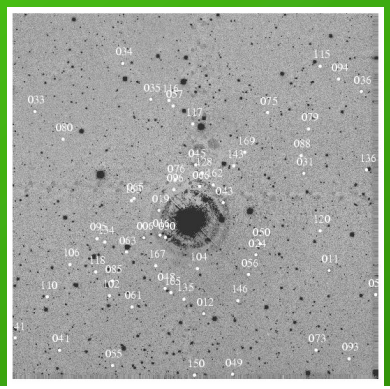
Spectral energy distribution



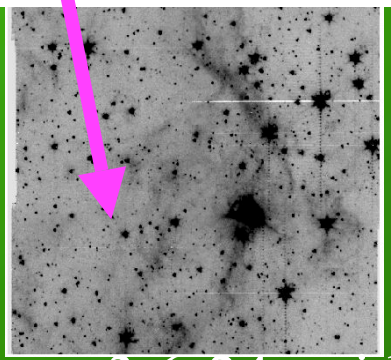






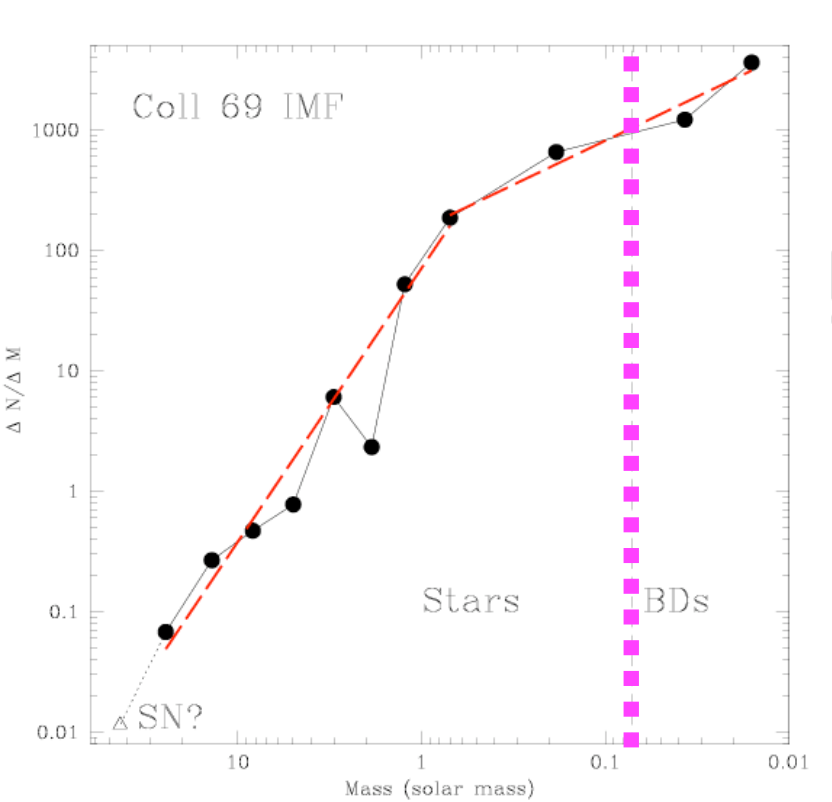


Omega2000, IR



Spitzer 3.6-24, mid-IR

3. Study the universality of IMF



David Barrado y Navascués

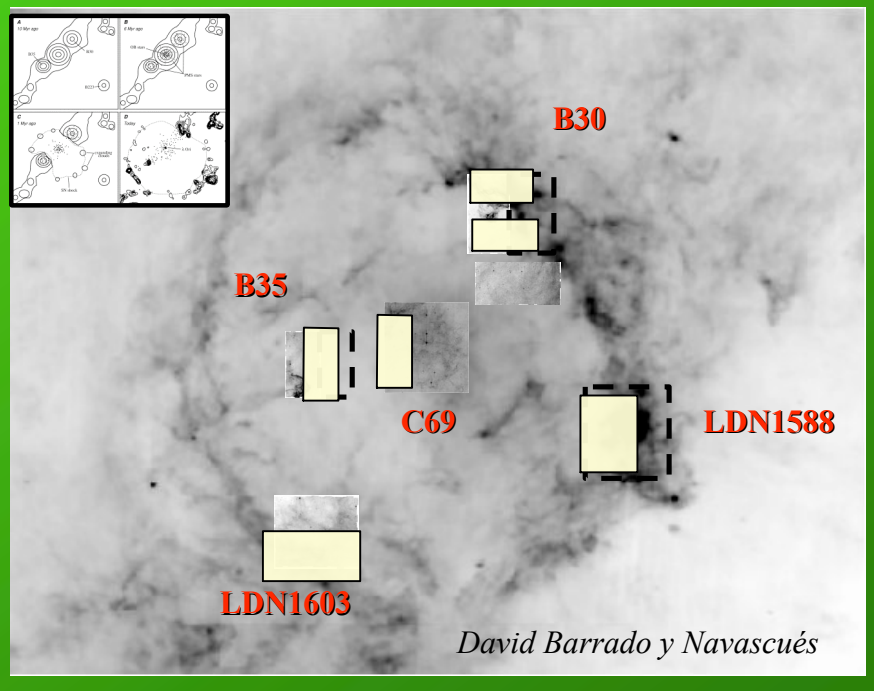
- Fit the IMF for the stars of LOSFR.
- The study of a XMM data must improve the IMF.
- Now our faintest candidate cluster member ~0.015 Solar mass.

X-Ray data and XMM

•Study some regions with XMM.

•Measures with all the instruments: RGS1, RGS2, MOS1, MOS2, pn, OM.

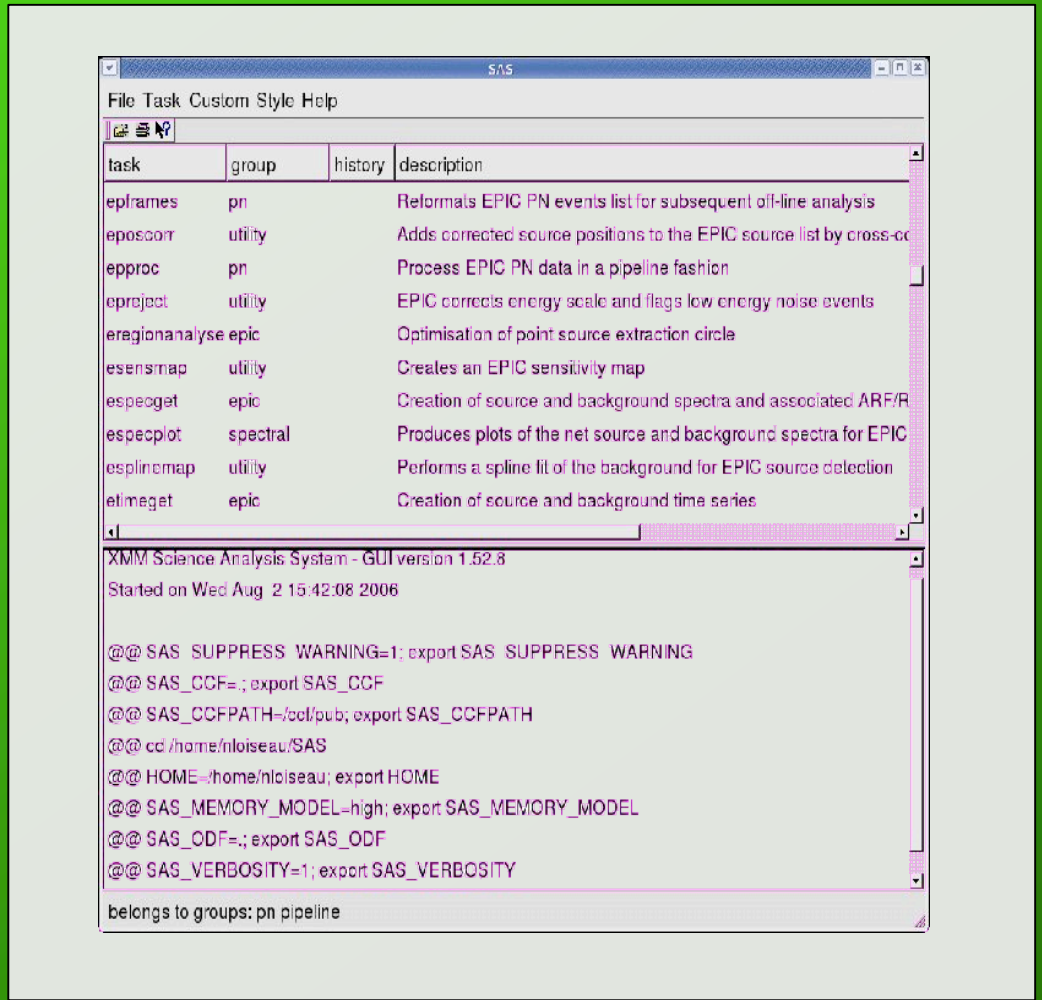
•There's 6 observations of 28000 s each.



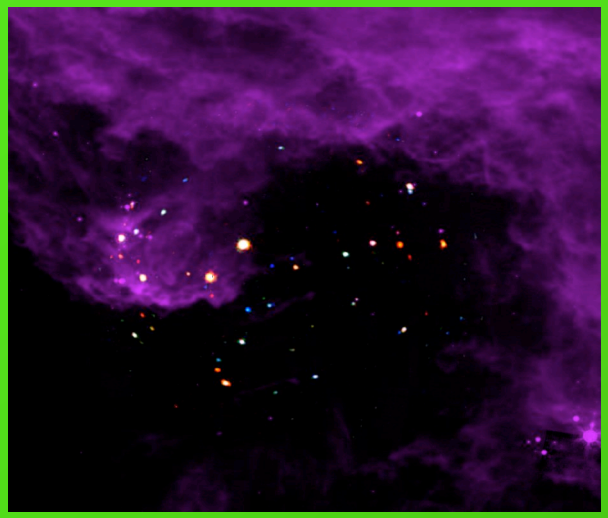
Using SAS

- Data reduction: SAS.

- Reduce the data with the standard tasks.



First results:



Barnard30

XMM-Newton image overlapped onto a Spitzer/MIPS at 24 micron

Next steps:

Continue with the identification of the stars in the different regions.

Derive the IMF