Star formation and disk evolution in the sparse Coronet cluster

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Th. Henning, H. Linz, P. André, C. Eiroa, A. Stutz, G. White, M. Fang, & Gould Belt Survey
A multiwavelength view of the Coronet cluster

A multiwavelength view of the Coronet cluster

- Distance 130 pc. [Ortiz et al. 2010]

- Multiwavelength observations (from submm to X ray) reveal active star formation, a few HAeBe, and several tens of TTS. [Loren 79; Marraco & Rydgren 82; Harju+93; Chini +03; Nutter+05; Groppi+04, 07; Garmire & Garmire 03; Forbrich & Preibisch 07; Lopez-Marti+05; Kainulainen+09;........]

- Spitzer revealed the properties of the inner disks of the cluster members. [SA+08,11; Peterson +11]

Now Herschel reveals in detail the embedded population and the global disk structure!
Herschel: The birth of the Coronet members

The cluster center:

a compact group of new-born stars, progenitors of HAeBe and CTTS, most of them in multiple systems
The disks: A bit of everything in a small cluster

Multiwavelength data plus RADMC radiative transfer models for M-type stars

[Sicilia-Aguilar et al. 2012/3]
The disks: A bit of everything in a small cluster

Processed grains, settled disks, globally depleted disks, inside-out evolution (gaps/holes), maybe truncated disks?

[Sicilia-Aguilar et al. 2012/3]
What happens in the core of the Coronet?

Temperature map
(ratioed map 100 µm/160 µm; contours 870 µm)

[SA et al. 2012/3]
What can affect disk dispersal?

Environment? Initial conditions?

Disks in sparse clusters: a harsh childhood but a peaceful old life?

[Fang et al. 2012; Sicilia-Aguilar et al. 2012/3]
Final messages

It is not only how old a disk you are, but in which environment you live:

• Sparse clusters may not be so peaceful and quiet, at least if they are very crowded!

• The initial conditions/environment play a role in shaping the disk (and in its dispersal).

• This may also affect planet formation.

To be continued: the initial conditions that give rise to these disks.