of similar indexes (~ −0.2;−0.3, respectively) in a scale of 0.05° to 0.5°. This power-law form of the correlation function and the presence of nested contours in the star count maps within the same scale suggest the existence of hierarchical clustering in the spatial distribution of the young stars in Orion A. In a scale of 0.5° to 5–6° we also found a power-law form for the correlation function due to the fall off density of pairs once the clusters' radii or the boundary of the configuration are reached. For λ Orionis, the correlation function shows a secondary peak allowing us to detect two clusters in the spatial distribution of the young stars once the background population is appropriately taken in account. The break in the correlation function (at ~ 0.5°) corresponds to the clusters' radii.

We concluded with some remarks about the utility (advantages and limitations) of this technique in general and to the particular cases of Orion A and to the λ Orionis association.

THE FORMATION OF THE ρ OPHIUCHIS AND CHAMAELEON CLOUD COMPLEXES

Jacques R.D. Lépine[1]

Lepine & Duvert (1993, LD) proposed a model of star formation by collision of High Velocity Clouds (HVC) with the galactic disk. They used a simplified hydrodynamical and dynamical code to reproduce the morphology of a number of cloud complexes and the relative position of galactic clusters associated with them. In particular, LD proposed that the ρ Ophiuchis molecular cloud complex and and the Sco-Cen galactic clusters originated from the infall of a HVC. In order to confirm the LD model, we investigated the space motion of the stars belonging to the Sco-Cen clusters.

We collected proper motions and radial velocities of the members of the Scorpius and Centaurus clusters, from the Hipparchos Input Catalog and from other sources like Bertiau (1959), and distances obtained from photometry by Geus et al. (1989), and we computed the velocity components of each star along the X, Y and Z directions (X and Y in the galactic plane), correcting for the components of the basic motion of the Sun ($V_\odot$ = 15.4 km/s, l = 56°, b = 23°). We also considered that the LSR as presently defined may present a velocity of about 10 km/s in the direction of the anticenter, which is controversial.

The main results are: *i)* the velocities of the stars of the 3 clusters are parallel to the direction of aligment of the molecular clouds. A remarkable characteristic of the ρ Oph-Lupus-Chamaeleon-Coalsack complexes is the alignment of their projection on the galactic plane, already noted by Dame et al. (1987) among others. This alignment suggests a common origin for the formation of the Musca-Chamaeleon and ρ Ophiuchis cloud complexes. *ii)* From the space velocities and ages of the stars, all the events giving rise to the ensemble of cloud complexes and galactic clusters took place within the last 30 My. This is short compared to the galactic rotation (250 My) and to the period of oscillation in the Z direction (70 My). The HVC collision with the disk started near the present position of the ρ Oph clouds, and probably debris of this collision crossed again the plane, forming the Chamaeleon clouds.

Bertiau, F.C., 1958, ApJ 128, 533
Dame, T.M. et al., 1987, ApJ 322, 706
Lepine, J.R.D., Duvert, G., 1994, A&A 285, 414

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HIERARCHICAL MODEL FOR CLOUD COMPLEX EVOLUTION

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The structure of cloud complexes appears to be well described by a structure tree (i.e., a simplified "stick man") representation when the image is partitioned into "clouds" (Houlahan and Scalo 1992). In this representation, the parent-child relationships are assigned according to containment; i.e., a cloud is the child of another (of lower density) if its boundary lies within its parent cloud. Based on this cloud complex representation a hierarchical model for Cloud Complex evolution is constructed. The model follows the mass evolution of each cloud (substructure) by computing its mass exchange with their parent and children. The parent-child mass exchange depends on the masses of both clouds, on how many older brothers the child has, and on the radiation density in the parent cloud (low parent mass and high radiation density tend to evaporate the children). At the end of the "lineage", stars may be born or die; so that, there is a non-stationary mass flow in the "Fractal Structure". This simple model allows to study the dependence of the Initial Mass Function on the included physical parameters.

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