JACOBUS CORNELIUS KAPTEYN (1851-1921)

After a portrait painted by Jan Veth in February 1918.

Kapteyn was born in Barneveld (Netherlands) on 19 January 1851, studied at Utrecht, and obtained a doctorate in Mathematics and Physics on 24 January 1875, on a thesis, "Onderzoek van Trillende Platte Vliezen". He was professor of Astronomy, Probability Theory, and Mechanics at Groningen University from 1878 to 1921.
The portrait in the upper right corner is one of Sir David Gill, Royal Astronomer at the Cape.

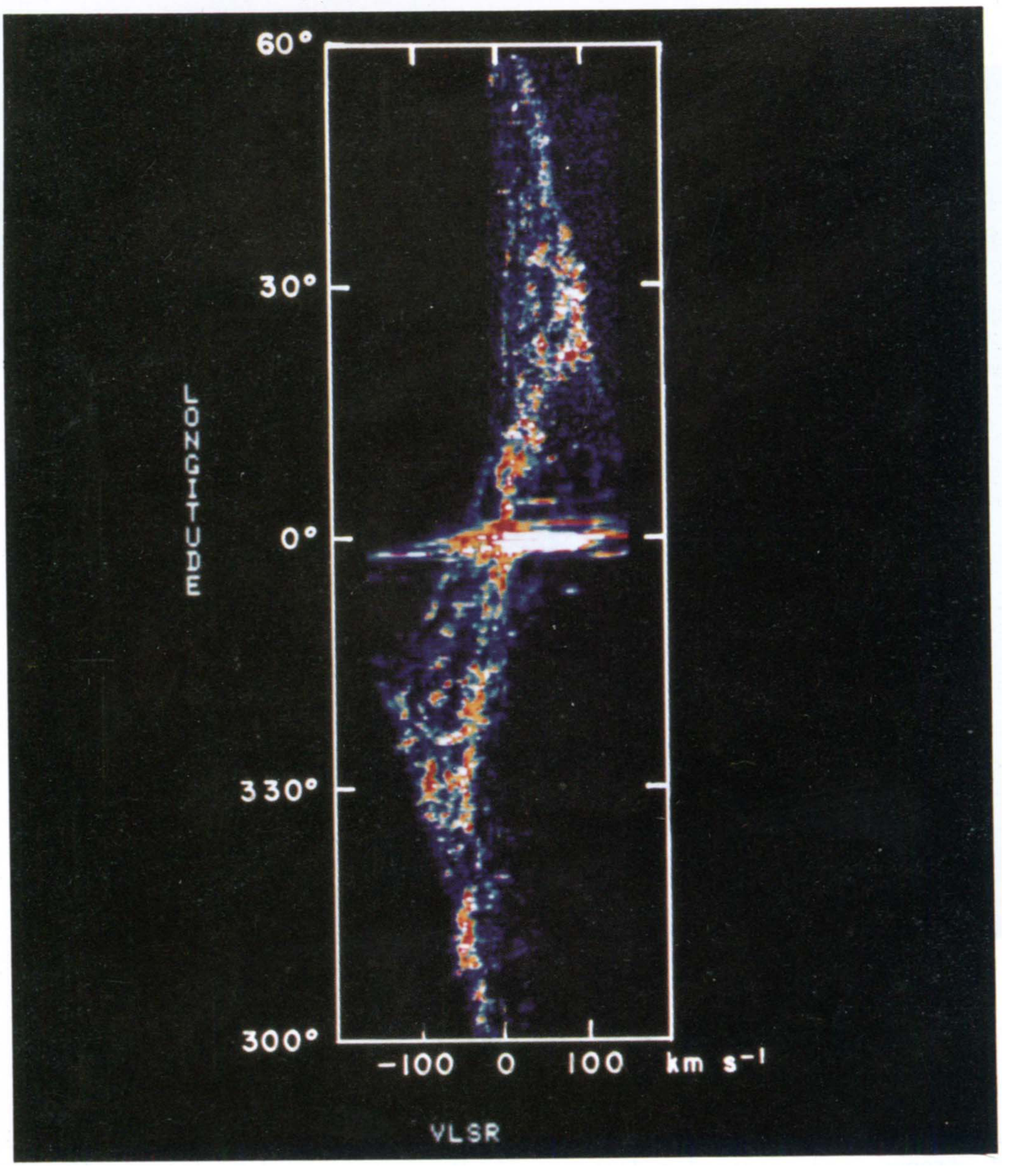


Figure 1 (Cohen, Thaddeus and Bronfman, Section II.3). False-color longitude-velocity plot of CO emission from the galactic equator. The data from ℓ = 12° to 60° are from our fully sampled New York survey. The data from ℓ = 348° to 12° are only sparsely sampled. From ℓ = 330° to 348° spectra were taken every beamwidth. For the Northern Hemisphere the bandwidth is 166 km s^{-1} and the noise per 500-kHz channel is 0.45 K (RMS); for the Southern data the bandwidth is 333 km s^{-1} and the noise is 0.12 K. In both cases baselines are excellent: only straight lines have been removed.

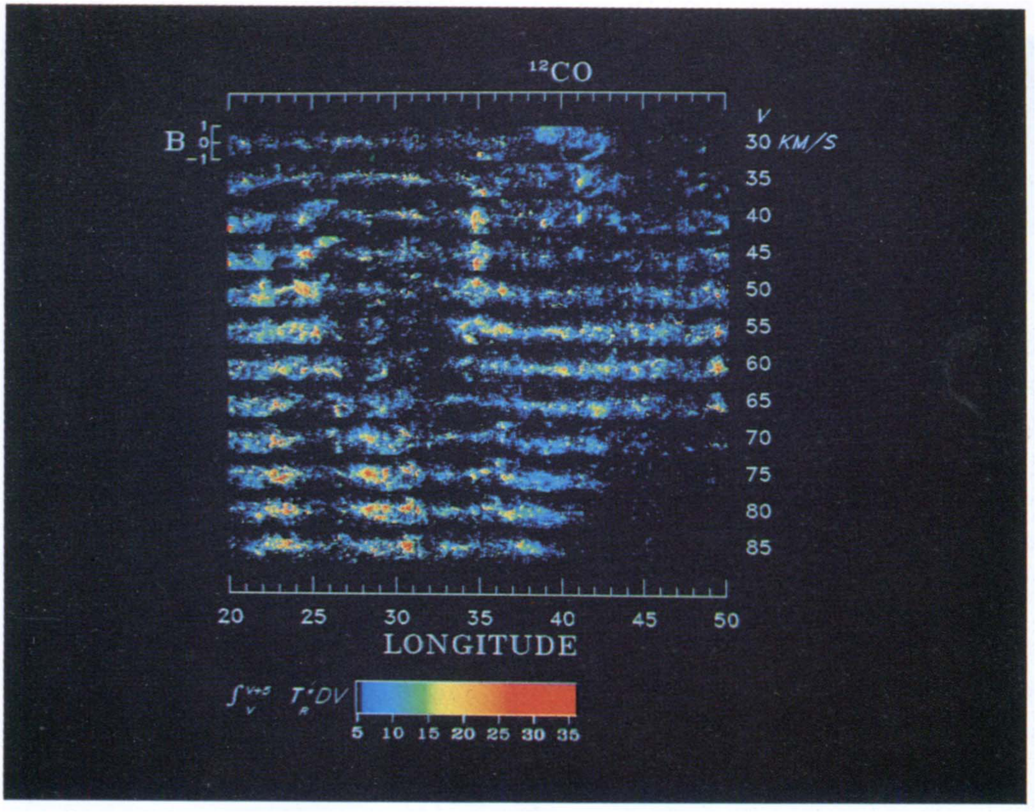


Figure 1 (Sanders, Clemens, Scoville and Solomon, Section II.6). Longitude-latitude strip maps of integrated CO emission, $\int T_R^*(CO)\,dv$, in 5 km s^{-1} bins. Each strip map reaches from −1° to +1° latitude. The integrated emission is coded in colour; the scale is in K km s^{-1}. Single giant molecular clouds (GMC) have line widths of 5-15 km s^{-1}, and hence usually appear in 2 or 3 adjacent strips. Each strip contains emission from both the near and far sides of the inner galactic disk. At low velocities these regions have distance ratios typically a factor 2-5, thus far-side clouds will be a factor 4-25 smaller in solid angle. Near the maximum velocity allowed by galactic rotation, blending of emission features increases due to the decreasing radial-velocity gradient.

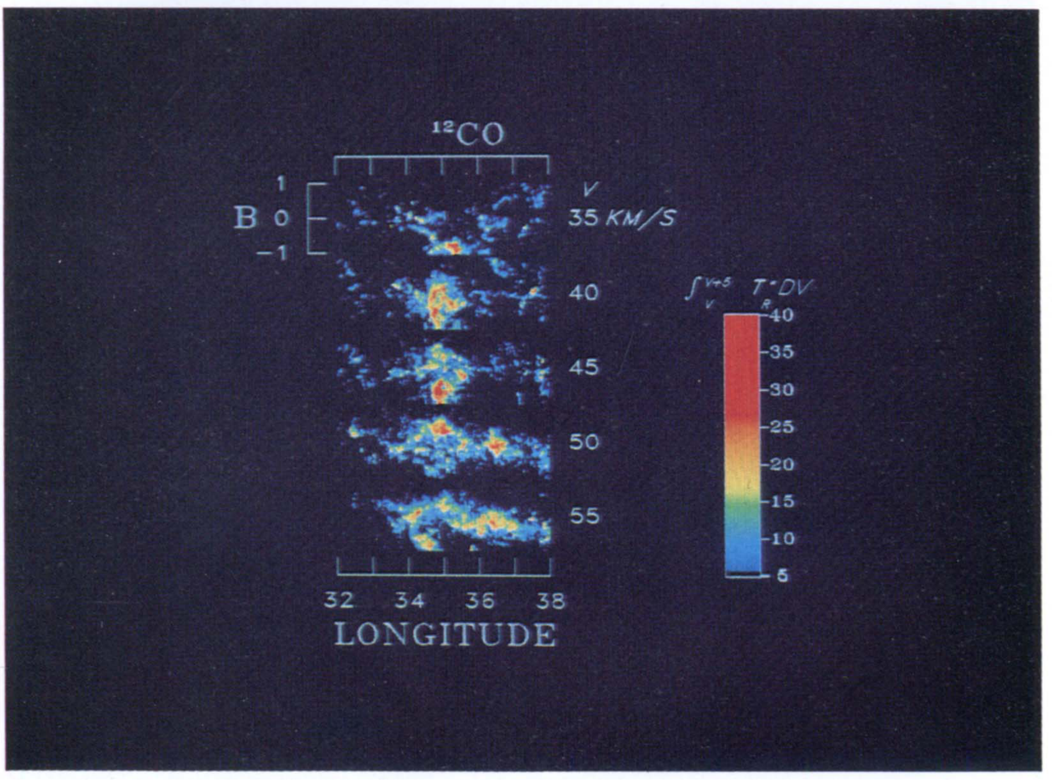


Figure 2 (Sanders, Clemens, Scoville and Solomon, Section II.6). CO emission from the cluster of GMC associated with the W44 region. This map represents a small section of Figure 1.

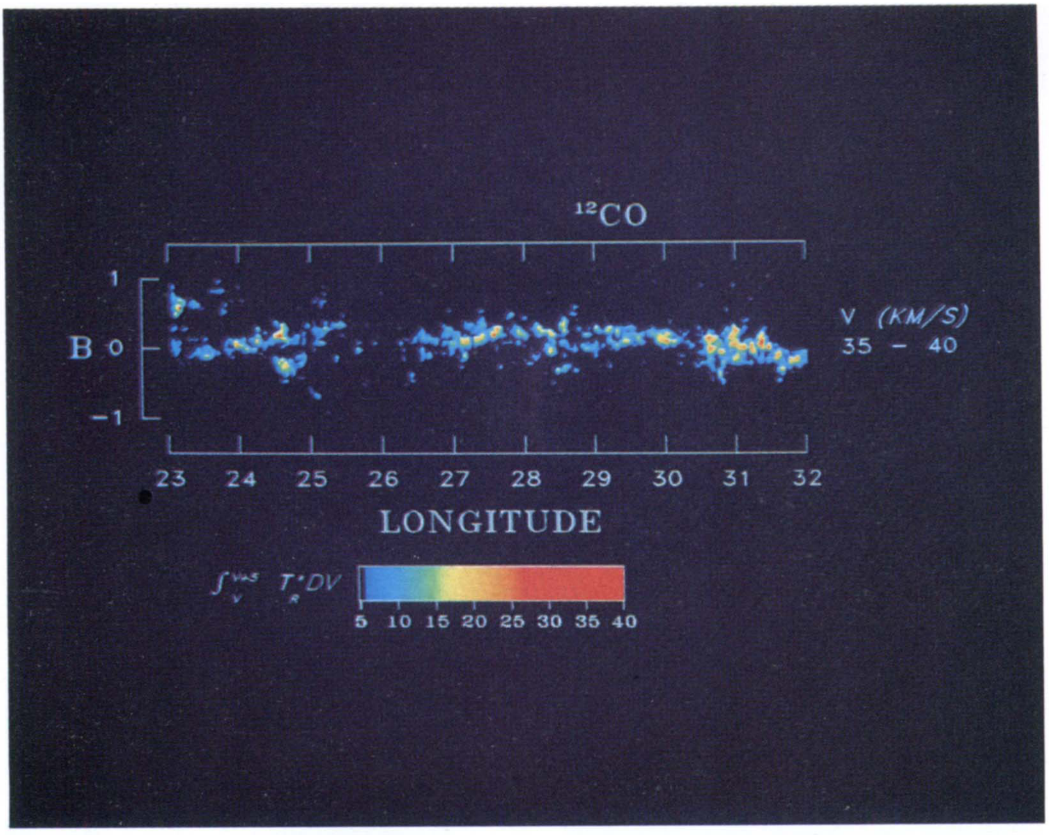


Figure 3 (Sanders, Clemens, Scoville, and Solomon, Section II.6). A chain of 'far-side' molecular clouds between longitudes 23° and 32°, located approximately 14 kpc from the Sun. The colour scale is in units (K km s^{-1}) of CO integrated intensity, $\int T_R^*(CO)\,dv$, in 5 km s^{-1} bins.

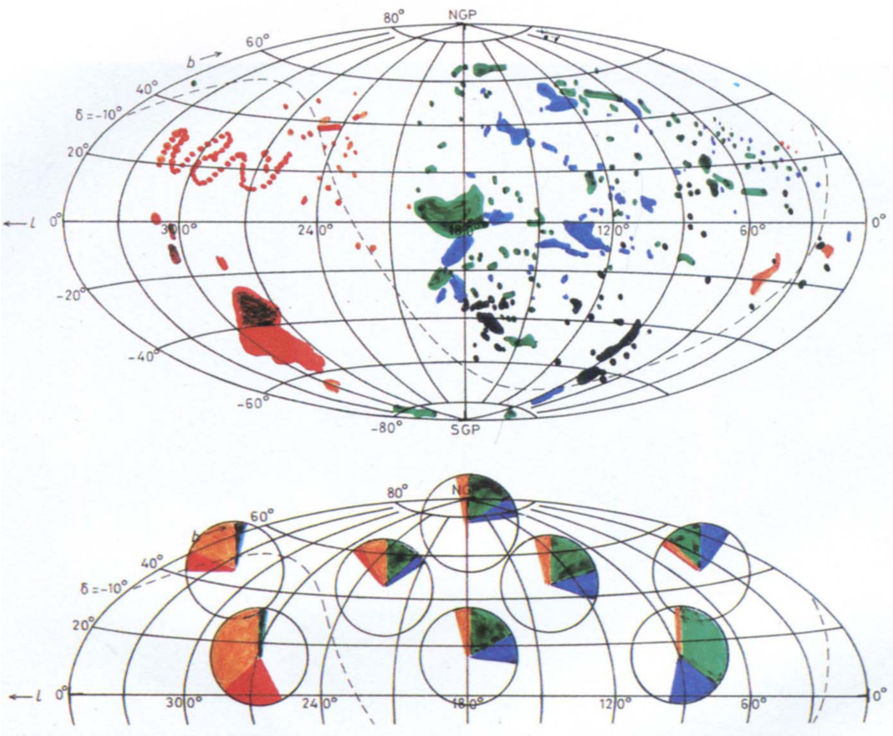


Figure 1. (Van Woerden, Schwarz and Hulsbosch, Section II.8)
Upper panel (a): Velocities of high-velocity clouds (HVCs) as summarized by Mirabel (1981a). Outlines of HVCs are only roughly sketched. Velocities (in km/s, relative to the local standard of rest, LSR) coded as follows: black, $V < -220$; blue, $-220 < V < -130$; green, $-130 < V < -80$; orange, $+80 < V < +130$; red, $+130 < V < +220$; brown, $+220 < V$. The brown patch at $\ell \sim 280°$, $b \sim -33°$ is the Large Magellanic Cloud.
Lower panel (b): HVC velocities predicted by galactic-fountain model (nr. E1) of Bregman (1980, Figure 5). Predicted frequency distribution of velocities in regions of $\sim 30° \times 30°$ shown; colour code as for upper panel. Velocities $|V| < 80$ km/s, the majority, are left blank. Predicted distributions at $b > 0$ and $b < 0$ are equal.

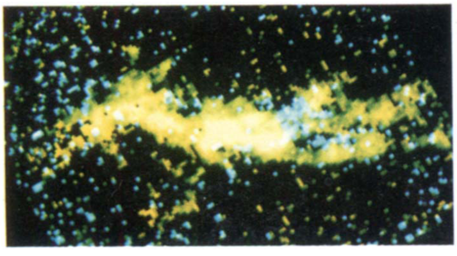


Figure 6. (Van Woerden, Schwarz and Hulsbosch, Section II.8) Small-scale structure and velocity field (colour-coded) in HVC 132+23-210, as measured by Schwarz at Westerbork. Resolution 50", field size $d\ell \times db$ shown 45' x 24'. Note long filament at roughly constant latitude, with several condensations. Velocities vary little in this filament and in the faint one crossing it.

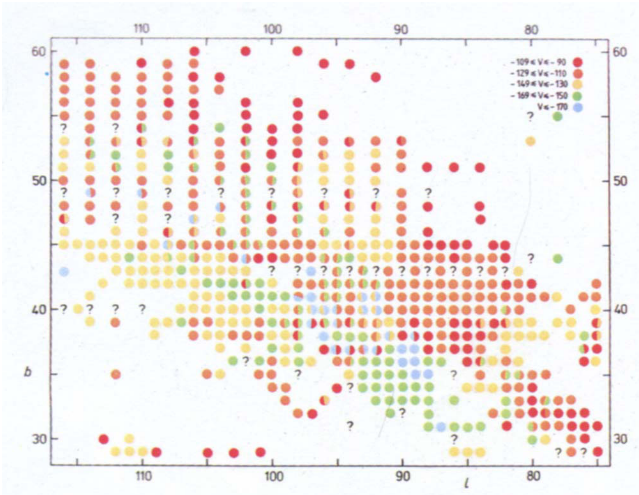
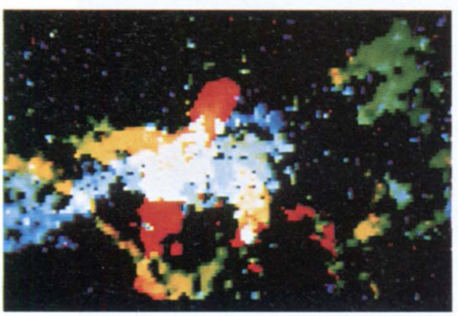
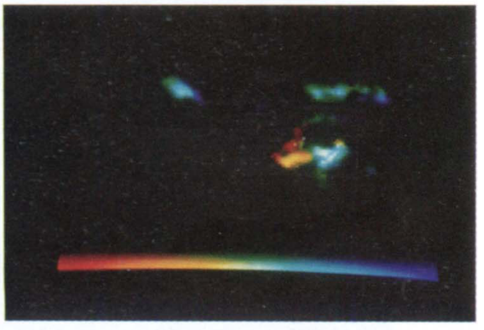
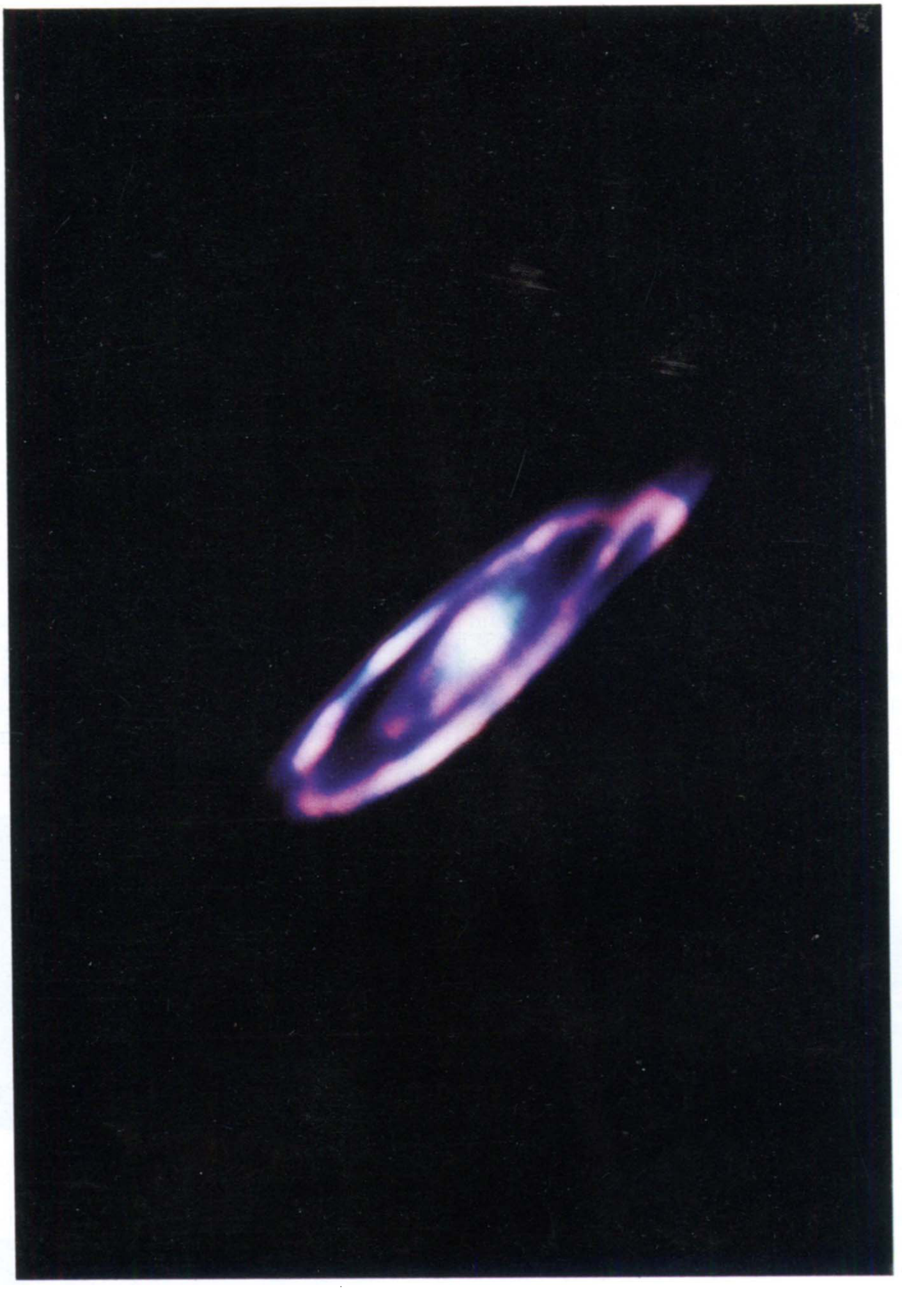


Figure 4. (Van Woerden, Schwarz and Hulsbosch, Section II.8) Velocity field in complex C, as measured by Hulsbosch at Dwingeloo on a 1° grid. Telescope beamwidth 0.6 degrees, velocity resolution 16 km/s. Velocities (in km/s, relative to LSR) coded as shown in top-right corner. Question marks denote points not yet measured. Above b = +45°, longitude spacing is 2°. Note presence of two components at many positions.





Left: Figure 7. (Van Woerden, Schwarz and Hulsbosch, Section II.8) Velocity field in HVC 139+28-190, cloud AI in Chain A, as measured by Schwarz and Oort (1981) at Westerbork. Field size shown 40 x 28 arcmin, angular resolution 50 arcsec, velocity resolution 2.1 km/s. Velocity scale runs from -209 km/s (red) to -173 km/s (blue). Note overlap on sky of 2 or 3 components in many places, shown by white or by mixed colours.
Right: Figure 8. (Van Woerden, Schwarz and Hulsbosch, Section II.8) Velocity field in HVC 153+39-178, cloud AIV in Chain A, as measured at Westerbork by Schwarz (in preparation). Angular resolution 50 arcsec, velocity resolution 1.7 km/s. Velocity scale runs from -192 km/s (blue) to -162 km/s (red); its length corresponds to 24 arcmin East-West; the vertical (declination) scale is a factor 1.9 compressed. Note transverse velocity gradients in several filaments. East at right in this figure.



IRAS map of the Andromeda Nebula (Habing, Section II.9, Figure 1)

This colour picture combines the surface-brightness distributions at 12 micron (blue), 60 micron (green), and 100 micron (red). The first two maps have been convolved to the angular resolution of the 100-micron map. In the lower half of the picture the blue image is that of an unrelated, foreground star. It indicates the response to a point source. The white colour of the central region indicates that the emitting dust there is hotter than the dust in the ring.

https://doi.org/10.1017/S0074180900242058 Published online by Cambridge University Press