MORPHOLOGICAL AND SPATIAL DISTRIBUTIONS OF HIGH VELOCITY MOLECULAR OUTFLOWS

Yuefang Wu[1,2] **Maohai Huang**[3] **Jun He**[2]
1. CCAST (World Laboratory), P.O.Box 8730, Beijing 100080, P.R.China
2. Department of Geophysics , Peking University, Beijing 100871, P.R.China
3. Beijing Astronomical Observatory, Beijing 100080, P.R.China

ABSTRACT. Data of 136 high velocity outflows listed in a comprehensive catalogue and maps of three dimensional distribution are presented. The distribution of collimation factors and the formation rate is estimated.

After giving a brieve review, we present a catalogue of known high velocity outflows. The catalogue consists of 136 items compiled from a number of publications till Febrary,1991. Each item contains data of an object including the position in both the equatorial and the galactical coordinates, the outflow velocity (the bottom spectral linewidth at 0.1k or 0.2k above the zero temperature level), the collimation factor, the mass of the outflows and the luminosity (ref. Lada,1985). All references and materials providing data are also given.

Besides the collimation factors which are available directly from original articles, some are measured and calculated from their published contour circles. The scheme to calculate collimation factors is discussed.

We find that half of the collimation factors fall between 1.5 and 2.0. Analysed with a column modle, it is known that a large portion of the outflows have intrinsic collimation factors close to their observational ones. So the average intrinsic collimation factor of the sample outflows can be estimated at a bit less than 2, which means that every lobe of many bipolar sources roughly has a round feature, and sugests that there is a fairly large outflow velocity component which is perpendicular to the bipolar axis . It is also found that large mass (grater than $2M_{\odot}$) sources tend to have large collimattion factors.

We present maps of three dimenssional distribution of the outflows in two scales. Each chart shows spatial projection on different Galactic coordinate plane. The sun is the origin. Objects having different mass are plotted by different symbols.

105 outflows in the catalogue are not farther than one kiloparsec from the sun . The formation rate of the outflows is 7×10^{-4} $yr^{-1}kpc^{-2}$, if the avaerage life time of such objcct is assumed as 5×10^{4} years, an intermediate value between that of low and high mass outflows . That formation rate is close to the birth rate of the local stars.

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