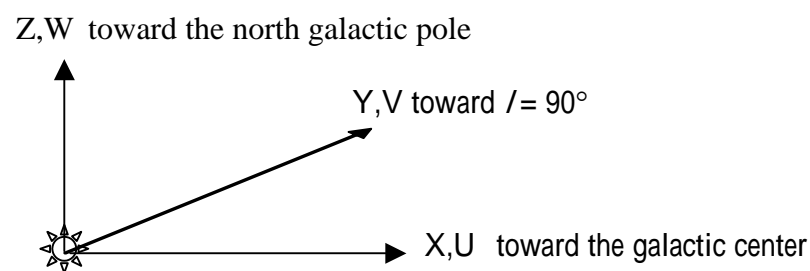


## Analyzing process

The epoch of Hipparcos catalogue is 1991.25 as the reference in this work. When the stellar coordinate, proper motion and velocity are transformed into the equatorial rectangular coordinate system and the galactic system in epoch 1991.25, the data must be corrected the effect of precession to consist with the observed data of the catalogue in the same epoch, J1991.25. The transformation of precession in this research is gotten from the SAO catalogue, and then the components of stellar position in the celestial coordinate system, right ascension and declination, are transferred to the galactic coordinate system,  $l$  and  $b$ . Similarly, the proper motion  $(\mu_{\alpha} \cos \delta, \mu_{\delta})$  are transfer to  $(\mu_l \cos b, \mu_b)$ . The galactic position XYZ of each star is calculated by its position and parallax, while the galactic velocity UVW are calculated by its proper motion and the radial velocity.

In the XYZ coordinate system, the positive direction of X points towards the galactic center, that of Y points towards the direction of solar motion, and that of Z points towards the north galactic pole. The velocity coordinates U, V, and W are



also oriented along the same directions of the position components X, Y, and Z. Besides, the unit of distance is pc and that of velocity is km/sec.

Because the amounts of the radial velocity are less than that of the Hipparcos catalogue, database used in this work has been divided into two parts: data with radial

velocity and data without radial velocity. The diagrams of space distribution, proper motion, and UVW velocity distribution of OB stars, A0 – A5 stars, and selected OB, A0V – A5V stars whose error of parallax and radial velocity is 50% are used to find the information about Gould Belt. After the results are obtained, the selected stars, which is more precise, are transformed into the Gould Belt coordinate proposed by Guillout *et al.* (1998) and then use the angles obtained in the research to compare with the model of Guillout.

The solar motion is calculated by use of the formulae of the “Galactic Astronomy” (Mihalas & Binney, 1981), while the Oort’s constants are from the formulae derived by Oort and evolved by astronomers who studied the constants later (e. g. Lindblad, 1941; Torra *et al.*, 2000; Fernández & Figueras, 2000). The stellar motion would remove the other value of the solar motion quoted from the result of Torra *et al.* (2000) to compare with the calculated value in the research.