

Constructing of the stellar velocity field using Hipparcos data

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It is well known that the stellar kinematics in the Solar neighborhood is more complicated than one described by the standard kinematical model.

It is highly desirably to have three components of a stellar velocity to investigate the velocity field in the solar vicinity.

Unfortunately, the Hipparcos catalogue does not contain the radial velocities and does contain only proper motions. That is why we cannot determine the individual spatial velocity of each star. Nevertheless, we propose the original method which allows to construct the full vector field of the stellar velocities.

The individual parallaxes allow to arrange the non-symmetrical in space selections of stars. The solutions of the Airy-Kowalski equations using such selections yield the components of the Solar motion with regard to a group of stars. The differences between the various values is the material to construct the velocity field. This is the basic idea of the method.