

ANALYSIS OF MODERN ASTROMETRIC CATALOGUES IN THE GAIA ERA

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We investigate of the systems of proper motions of stars in the ground-based catalogues HSOY, UCAC5, GPS1 and PMA derived by combining with the Gaia DR1 space data. Assuming the systematic differences of stellar proper motions of two catalogues to be caused by the mutual solid-body rotation and glide of the coordinate systems produced by the data of the catalogues under comparison, we analyse the components of the mutual rotation vector and displacement of the origins of these systems. The equatorial components of the vector of mutual rotation velocity of the compared coordinate systems, as well as velocities of the mutual displacement of their origins, varying within the range from 0.2 to 2.9 mas yr⁻¹, were derived from a comparison of proper motions of the sources that are common for Gaia EDR3 and the TGAS, UCAC5, HSOY, GPS1 and PMA catalogues, respectively. The systematic errors of proper motions of stars in the HSOY, GPS1, PMA and Gaia EDR3 catalogues in the range of faint stellar magnitudes were estimated by analysing the formal proper motions of extragalactic objects contained in these catalogues.