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Optical counterpart positions of extragalactic radio sources and connecting optical and radio reference frames

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Abstract

We discuss the results of an investigation of astrometric positions of extragalactic radio sources from a list for the International Celestial Reference Frame. About 300 fields around extragalactic radio sources were observed during the years 2000-2003. The observations were performed mainly using two telescopes equipped with CCD cameras at TUG, Turkey (Russian-Turkish Telescope - RTT150) and at YAO (1 m telescope), (Kunming, China). The mean accuracies of the measured positions are 38 mas in right ascension and 35 mas in declination. A comparison between the measured optical positions determined using the UCAC2 catalog and the radio positions from the current ICRF shows that the overall optical-minus- radio offsets are -4 and +15 mas for right ascension and declination, respectively. The formal internal errors of these mean offsets are 4 mas. The results of optical positions with respect to the reference catalogue 2MASS are also given. A search for a relation between optical and radio reference frames indicates that the orientation angles are near zero within their accuracy of about 5 mas. The link accuracy becomes 3 mas when our observations are combined with other studies.

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Keywords

Astrometry, Reference systems