

Paperback Re-issue

Fundamentals of Astrometry

Astrometry encompasses all that is necessary to provide the positions and motions of celestial bodies. This includes observational techniques, instrumentation, processing and analysis of observational data, reference systems and frames, and the resulting astronomical phenomena. Astrometry is fundamental to all other fields of astronomy, from the pointing of telescopes, to navigation and guidance systems, to distance and motion determinations for astrophysics. In the last few decades, new observational techniques have facilitated improvements in accuracy by orders of magnitude. Starting from basic principles, this book provides the fundamentals for this new astrometry at milli- and micro-arcsecond accuracies. Topics include basics of general relativity; coordinate systems; vectors, tensors, quaternions, and observational uncertainties; determination and use of the celestial and terrestrial reference systems and frames; applications of new observational techniques; and present and future star catalogs and double star astrometry. Examples of astronomical computations and a large glossary are also provided. This comprehensive text is an invaluable reference for graduate students and research astronomers.

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