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Special Issue Reprint

New Discoveries in Astronomical Data

www.mdpi.com/books/reprint/11837

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ISBN 978-3-7258-5569-8 (Hardback)
ISBN 978-3-7258-5570-4 (PDF)

With the rapid growth of astronomical data from both ground-based and space-based telescopes (e.g., SDSS, LAMOST, ZTF, Pan-STARRS, FAST, WISE, GAIA, and JWST), astronomy has entered the era of big data. This presents a significant challenge for astronomers in terms of handling and analyzing such vast amounts of data, due to its complexity, heterogeneity, high dimensionality, and massive volume. As a result, new data processing techniques and methods are being developed. A variety of feature extraction and selection methods are emerging, and machine learning and deep learning have become essential tools for managing astronomical big data. Furthermore, the advent of multi-messenger and time-domain astronomy has created exciting opportunities for new astronomical discoveries. Special, rare, and even entirely new objects are continuously being observed. This Special Issue reprint provides a comprehensive overview of these developments.



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